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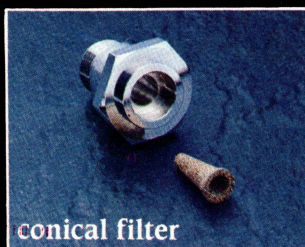
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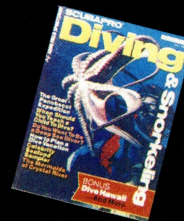


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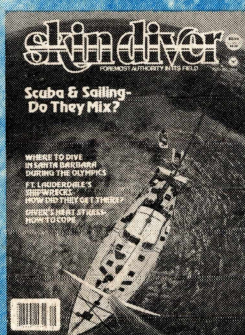


skin diver

Volume Thirty-three Number Eight

FEATURES

PHOTOGRAPHY	24	PADI PHOTO SEARCH	JEFF MONDLE
	32	POLAROID'S INSTANT SLIDES	PAUL SCHUTT AND LYNN FUNKHOUSER
	52	WRECK PHOTOGRAPHY	JIM AND CATHY CHURCH
PERSONALITIES	36	DOCTORS WHO WORK IN THE SEA	HILLARY HAUSER Paul Linaweaver and Hugh Greer
DIVE EQUIPMENT	38	NU-WAY MINI COURSE ON REPETITIVE DIVE TABLES	JIM WALKER
	50	SCUBAPRO'S MARK X REGULATOR	GEORGE COZENS
	54	MARES/SEAQUEST EXPLORER 22 SPEARGUN	FRED FISCHER
	55	JM COUSTEAU SIGNATURE WETSUIT	JIM WALKER
	56	PARKWAY SUBMERSIBLE PRESSURE GAUGE	BONNIE J. CARDONE
	114	TABATA TOTAL DIVING SYSTEM	ERIC HANAUER
COMMERCIAL DIVING	42	DIVERS INSTITUTE OF TECHNOLOGY	E.R. CROSS Well rounded training
LOCAL DIVING	46	DIVING THE OREGON COAST	KARL ANDERSON Wrecks, seafood and underwater photos
	57	SANTA BARBARA DIVE GUIDE	MARTY SNYDERMAN The Northern Channel Islands and Central California coast
	78	PORT LARGO RESORT	STEPHEN FRINK Convenience in the heart of Key Largo
	82	FT. LAUDERDALE WRECKS	MARK M. LAWRENCE Spectacular artificial reefs
	92	FLORIDA'S UNDERWATER BRIDGE	KEVIN WADLOW Obsolete swingspan becomes reef
DIVE BOATS	49	SEA EAGLE GT-45	ERIC HANAUER
FOREIGN TRAVEL	67	CAP'N DON'S HABITAT	ELLSWORTH BOYD Blossoming vacation alternative on Bonaire
	72	MICRONESIA'S SUPER CRUISER	CARL ROESSLER Truk to Ponape on the <i>Thorfinn</i>
	74	SAIL BELIZE	STEPHEN FRINK Aboard the <i>Verano Sin Final</i>
	76	THE KIPP CONNECTION	GERI MURPHY A dive/lodging package for everyone
DEPARTMENTS	8	WRECK FACTS	
	11	SCUBA QUIZ	
	14	DIVER'S CALENDAR	
	16	FILM FESTIVALS	
		'N SYMPOSIUMS	
	20	TECHNIFACTS	
	29	Rx FOR DIVERS	
	116	DIVER'S DIRECTORY	



COVER

A tip-of-the-mast view of the 65 foot Irwin sail/dive yacht, Verano Sin Final, at the edge of the Blue Hole at Lighthouse Reef, Belize. For more on this live-aboard vessel, see page 74. Photo/Stephen Frink.

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SDM Editorial

BY THE PUBLISHER



THE DIVER'S GREATEST DANGER WHEN GOOD DIVERS DO DUMB THINGS

Accident research experts would be the first to point out that divers frequently do some very dumb things. Even though these men and women have been properly trained and have a wealth of experience, they make some obvious blunders in judgement. Even though they should know better, veteran divers make mistakes which even a basic scuba student could easily avoid.

An example is the case of the old-time diver who got bent on a dive boat trip off Catalina Island several years ago. He knew he had exceeded his maximum bottom time, but bagging that last abalone was important. By the time he had finished stowing his dive gear, he knew something was wrong. His coordination was off, his mind was a little fuzzy and he was feeling sharp pains in his right arm. Rather than report this suspected bends hit to the skipper, the diver quietly retreated below decks and crawled into an empty bunk. The pains grew worse and he buried his head in the pillow to keep from groaning out loud. By the time the boat reached San Pedro Harbor, the diver was in total agony. But he still refused to reveal his problem. He simply gritted his teeth and staggered down the ramp with his gear bag and tank. He made it to a nearby telephone booth and was able to call his wife for help. Because of the delay in treatment, this diver suffers from residual effects and still carries a painful reminder of his bout with the bends.

Then there is the case of the East Coast diver who drowned with a load of lobsters. He was one of the best lobster divers around and had a reputation for filling his bags in short order. He was working a wreck in 120 feet and had

three bags of lobsters tied to his wrist. This was not unusual, except that there was also a strong current running. Because of his fierce pride, the diver refused to drop his weightbelt. Only amateurs did something like that. Perhaps he should have inflated his BC, but, he wasn't wearing one. Not wearing a BC was another status symbol of the old pros along the coast. Struggling against the current and the drag of his lobster catch, this diver finally ran out of air and his lobstering career ended.

How about the case of the scuba instructor preparing for a wall dive on a Caribbean reef? He and his dive group had just arrived the day before and were eager to sample the deep, clear waters of this sensational drop-off. It wasn't until everyone was completely suited up that he noticed his submersible pressure gauge was broken. There was a slight leak at the swivel fitting and the indicator needle had come off the dial face. Normally, he would have changed gauges, but everyone was ready to go and he was holding up the dive. The instructor decided to proceed with the dive in spite of the broken gauge. Surely there would be no problem since he was the instructor and could no doubt outlast the air supply of his newly graduated students.

The dive group descended to 120 feet and started cruising along the wall. It was indeed awesome; visibility seemed to extend to 200 feet. Unnoticed by the instructor, the air leak on the submersible gauge had increased considerably. Although some of the other members of the group noticed the escaping air, they were not alarmed; they thought the instructor knew what he was doing. Then it happened. As they started to ascend, the instructor discovered his tank was completely drained and his regulator stopped working. At first he tried to buddy breathe with a nearby student, but a series of fumbles forced him to make a frantic free ascent from 110 feet.

In all of these case histories, the pattern is the same. An otherwise intelligent, experienced scuba diver makes a seri-

ous error in judgement which eventually leads to a dive accident. Sometimes it is fatal. Why do divers do dumb things? Because of the deep seated fears which exist in all of us.

As basic divers go through training, they develop self-confidence. They learn new skills, eventually master them, and finally feel secure in knowing they can handle the task without a problem. After graduation, the diver gains more experience and self-confidence turns to pride. The diver develops a reputation for being a competent diver. It is at this point that the diver becomes vulnerable to a new kind of fear. Because of his pride, he now feels more fearful of ridicule from his diving associates than from the actual dangers involved.

It is this fear of ridicule—fear of disappointing others or not living up to one's personal reputation—that eventually leads to problems. Rather than face embarrassment, the diver often prefers to risk his life in a dangerous situation. Rather than delay a dive and inconvenience the rest of the group, a diver will take unnecessary chances with defective or ill-fitting equipment. Rather than admit he may have the bends, a diver will secretly endure the pain and risk the possibility of becoming a permanent cripple. Rather than dump a \$60 weightbelt, a diver will risk remaining on the bottom forever.

What these divers fail to realize is that the consequences of such risk taking are equally embarrassing but usually more permanent. When a good diver drowns from some stupid mistake, the entire diving community is embarrassed. There should be no shame in aborting a dive for either mechanical or health reasons. This is what a good diver is expected to do. There should be no shame in dumping a weightbelt, inflating a BC or asking for help. It is what we have been trained to do in case of difficulty. A diver should never feel too proud to ask for help when he or she needs it.

The one thing we must always remember is that the greatest danger to a diver is himself. x

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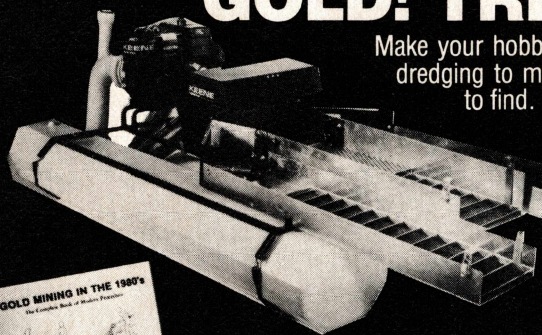
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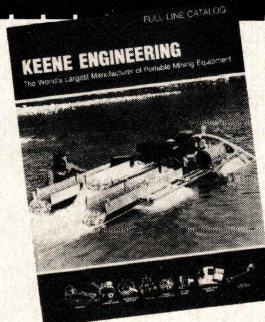
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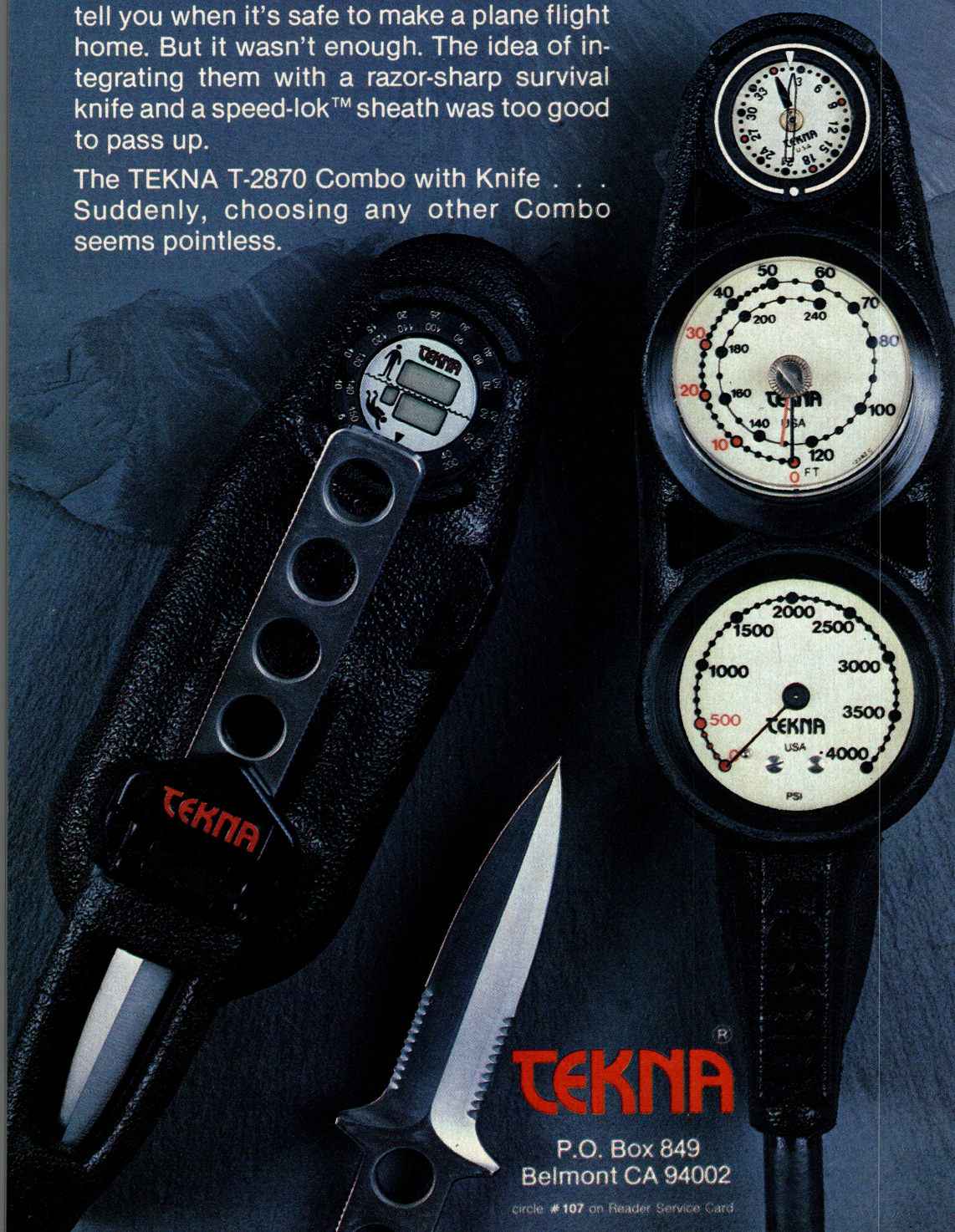
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BY ELLSWORTH BOYD

Two letters have been received from divers in Singapore, the South China Sea. One is from Jack Ahern, a commercial diver who is interested in wrecks in Southeast Asia. I contacted Tim Firme, Portsmouth, VA who was stationed in Singapore when he was in the Navy. Tim says there are two British warships sunk off Singapore, 150 to 200 feet deep. One is the *Prince of Wales*, a King George class vessel and the other is the *HMS Repulse*. They are sunk near Kuatan Point, on the east side of Malaysia, and experienced divers do explore these wrecks. You should try to contact divers from AN-ZUK, Jack, which stands for Australia, New Zealand and United Kingdom. They are stationed on the north side of Singapore where the Royal Navy sequesters them as a dive unit. They dive these warships when they are off duty and might take you with them. There are American, British, Dutch and Japanese wrecks off Southeast Asia, all World War II casualties. There was a battle fought in the Java Sea with heavy losses you might want to trace. Contact the British Royal Navy in Singapore and see if they have any records or archives on war losses.

The other letter received is from Mark Fredericks, a commercial diver in Singapore who is interested in the *Central America*, a treasure ship sunk off the coast of South Carolina. Over 400 men lost their lives when the *Central America* sank in a hurricane September 12, 1857. Most of the victims were miners returning home from the California gold rush carrying their fortunes with them. Over two and one-half tons of registered gold was aboard the steamship, a 280 foot, three masted side-wheeler that breezed through Panama and passed Havana in fine fashion. But a full gale hit her off South Carolina forcing water into the furnace room where the engine went dead from lack of steam. The bark, *Maine*, out of Boston, discovered the *Central America* and rescued the women, children and a few men.

The *Central America* sank and the next day a Norwegian bark, *Ellen*, rescued some of the men who had drifted in the sea all night, clinging to spars from the

hapless steamship. The treasure-laden ship is supposed to be in deep water near the edge of the Gulf Stream, its precious cargo still intact. Dr. Lee Spence, underwater archaeologist and shipwreck expert, probably knows more about the *Central America* than anybody else. Lee is doing research on South Carolina and Georgia wrecks as part of a project for the College of Charleston. He has files on over 2,500 wrecks in the project area. He might find time to answer your inquiries on the *Central America* if you enclose a stamped, self-addressed envelope when writing to him: P.O. Box 211, Sullivan's Island, SC 29482.

I hope to meet many SKIN DIVER readers at the first annual Florida shipwreck symposium at Bahia Mar Hotel, Ft. Lauderdale, August 2-4. Organizer Bill Raymond has a host of interesting celebrities on his program, including Mel Fisher, Duncan Mathewson, Bert Kilbride, Mrs. Art McKee, Dimitri Rebikoff and many others. Bill has arranged for Bob Marx and Peter Throckmorton to guide four dives on old wrecks in the local area where archaeological techniques will be taught and practiced.

Divers who are interested in underwater archaeology, history and treasure hunting will enjoy the book, *Man: 12,000 Years Under the Sea*, by Robert F. Burgess. The author covers everything from the discovery of a Bronze Age wreck in the Aegean Sea to Teddy Tucker's fabulous finds of gold and jewels off Bermuda. Burgess offers fascinating accounts of the first dive on the *Monitor*, the search for the lost city of *Atlantis* and the secrets of Loch Ness. The book, containing 16 chapters and 60 photos, is available from: Val Martin, Florida Classics Library, P.O. Box 1657, Port Salerno, Florida 33492-1657.

My apologies to Kevin Firth. I forgot to list his address when informing Great Lakes divers about Kevin's offer to help them with their research. Kevin has quite an extensive file on the *Lady Elgin*, sunk in 1860 in Lake Michigan with a loss of 282 lives. Kevin writes, "I am expanding my research references to include Lake Superior and a small amount on the other

lakes. I'm specializing on wrecks earlier than 1890, but I do have some material on ships that sank in the early 1900s." Kevin's address is: Box 600-47794, Canon City, CO 81212.

Ralph Chicola, 10655 S.W. 79th Place, Miami, FL 33156, writes that he has a complete set of SKIN DIVER Magazines. He has extras he will trade or sell and he has back issues of other dive publications as well. Drop him a line if you are interested in swapping or buying. Many back issues of SKIN DIVER have articles on various shipwrecks.

Here is a plea from Hawaii: Dwight Barnell, Director, Sandwich Island Shipwreck Museum, Haleiwa, Hawaii, is compiling lists and locations of all known submarines, aircraft and ships sunk in the western and southern Pacific areas. He wants to know the history, mission and fate of all wrecks. If you can help, write to Dwight: 62-240 Lokoea Place, Haleiwa, Hawaii 96712.

Congratulations to Steve Pryce, formerly from Petoskey, MI, now retired in Key West, FL. Steve wrote to me six months ago and asked about sport diving opportunities that might be available in Key West. I suggested underwater archaeology and put him in touch with Duncan Mathewson, one of the world's foremost authorities in this field. I hope, Steve, that you are now actively engaged in marine archaeology, learning it from the bottom up!

Barry Jordan, Virginia Beach, VA, writes: "If for some reason someone should ever ask about the *Bella de Gambia*, sunk off Virginia Beach in the 1870s, tell them it started washing ashore at Cape Henry last winter. I will try to get more information on this wreck." Barry also says that he has a Graveyard of the Atlantic practically in his backyard. "Some years ago," Barry writes, "divers salvaged the wreck of a privateer, including some cannons, about 600 yards from where I live." If you want more information on these wrecks, Barry's address is: 3705-A Chesterfield Avenue, Virginia Beach, VA 23455.

Bert Blair, Pawtucket, RI, is looking for a copy of a wreck chart of the North Atlantic Coast of America issued by the Hydrographic Office of the Bureau of Navigation, Navy Department, 1893. He says, "All the sources I have written to, including the U.S. Navy and the National Archives in Washington, have turned up negative. Would the readers have any idea where I could obtain this chart?" If you have an idea, write to Bert: 15 Annette Avenue, Pawtucket, RI 02861.

Summer diving is in full swing and I know you are enjoying your favorite wrecks. Let me know if you find anything interesting. Address questions or comments to: Ellsworth Boyd, Route 2, Box 408, White Hall, MD 21161. Please include a stamped, self-addressed return envelope. ➤

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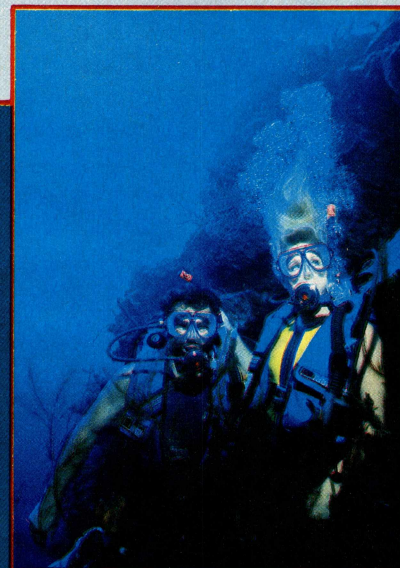


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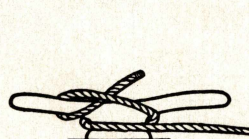
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Scuba Quiz

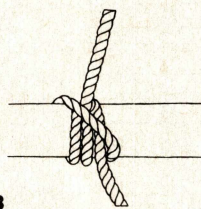
Category: Knots

By Dennis Graver

Everyone is required to tie knots from time to time, but divers' needs are probably more frequent and demanding than those of the average person. Around and underwater, the ability to quickly tie strong knots that will not jam or slip and that untie quickly is often needed. See if you can identify each of the knots illustrated and match the knot to the proper description. Just to make it interesting, there are more names and descriptions than there are knots shown, so not all items will be used. The answers and more information are on the following page.



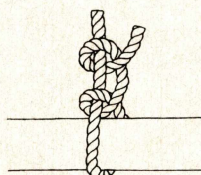
A



B



C



D



E



F



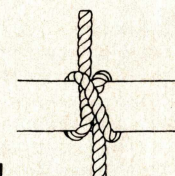
G



H



I



J

NAME OF KNOT	ILLUSTRATION	DESCRIPTION
Bowline		
Two Half Hitches		
Sheetbend		
Clove Hitch		
Cleat Hitch		
Rolling Hitch		
Figure Eight		
Double Sheetbend		
Anchor Bend		
Square Knot		
Becket Hitch		
Timber Hitch		

Descriptions:

1. Used to keep the end of a line from running through a block or grommet
2. For fastening a line to something such as a rail or a grommet in an awning
3. Used to tie together the ends of line which are of the same size and under constant pressure
4. Used to temporarily tie a line to a piling or rail
5. Commonly used to fasten a line to the ring of an anchor
6. Recommended for tying two lines together to form a longer line, especially if the lines are of different sizes or textures
7. Used to tie a small line to the standing part of a larger one or to attach a line to a round metal or wooden object when sideways slippage must be minimized
8. A variation of another knot and designed to reduce jamming of the knot under strain
9. Used to secure a line to a cleat
10. Used to fasten a line to a loop at the end of another line
11. Used to form a temporary loop at the end of a line
12. Used to temporarily secure a line to a spar or timber, particularly for towing purposes

Scuba Quiz

Answers: Knots

NAME OF KNOT	ILLUSTRATION	DESCRIPTION
Bowline	H	11
Two Half Hitches	D	2
Sheetbend	E	6
Clove Hitch	J	4
Cleat Hitch	A	9
Rolling Hitch	B	7
Figure Eight	G	1
Double Sheetbend	I	8
Anchor Bend	F	5
Square Knot	C	3
Becket Hitch	Not Shown	
Timber Hitch	Not Shown	

More on Knots

Bowline - One of the most useful of all knots. Although practice is required for learning, once learned it is easy to make, never slips or jams, does not pinch or kink the rope as much as some knots, and can be easily untied. Two bowlines can be used to join two lines together or the end of the line can be passed through a bowline to form a running noose.

Two Half Hitches - The holding ability of this knot is greatly improved by wrapping the line around the object to which it is being tied prior to tying the half hitches. This wrapping is called a round turn. The knot is very useful, quick to tie and easy to untie. Note that the two half hitches are actually a clove hitch around the standing part of the line.

Sheetbend - Upon close inspection, the sheetbend is actually a bowline formed from two pieces of line instead of one. Part of a sheetbend knot can be used to fasten a line to a loop in another line. When this is done, the knot is called a Becket hitch.

Clove Hitch - Although commonly used to tie a line to a rail or piling, it may be a mistake to do so because

the knot tends to slip. To increase security, a half hitch is often added on top. Except for temporary use, other knots are preferred for accomplishing the same purpose.

Cleat Hitch - A simple knot used aboard boats, the hitch should be initiated with a round turn around the cleat. Two or two and one-half figure eight turns are then added and the tie is completed by turning the last hitch under so the line binds against itself.

Rolling Hitch - The best possible way to tie a line to the standing part of another line is with this knot. It is very useful as an awning tie-down because it allows adjustments by sliding the

knot on the line. Its best application is for removing the strain from another line so the other line can be freed.

Figure Eight - Also called a stopper knot, the figure eight is simply an overhand knot with an extra turn. This knot is easy to untie compared to a simple overhand knot at the end of a line.

Double Sheetbend - The appearance of this knot changes under strain. The extra bend in a sheetbend gives this knot its name and is done to prevent the knot from jamming under a load. When tied to a loop in another line, this knot is known as a double Becket hitch.

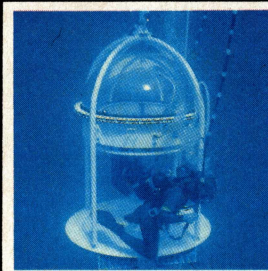
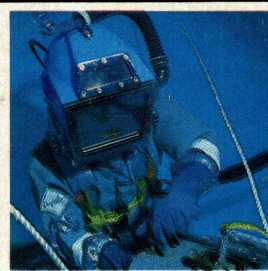
Anchor Bend - This is also called a fisherman's knot. Although it may be hard to untie, the anchor bend is an excellent knot because it doesn't tend to shake or work loose and because it reduces rope strength by only 25 percent.

Square Knot - Also called a reef knot, this method of tying is best used when a line is under constant pressure and both ends are the same size. A square knot is easily untied, even when wet. The knot is not good for tying two lines together to form a longer line, and of all the knots listed, this one reduces the strength of the line the most—45 percent.

Divers should be good seamen, and that requires the ability to select and tie a knot correctly. Not only should you be able to identify the knots illustrated and know the application for each, you should be able to tie them as well. With this ability, you will look good, increase safety and reduce frustration. By the way, description number 10 was for a Becket hitch and number 12 was for a timber hitch.

If you would like to learn more about knots and how to tie them, you will probably be interested in an advanced diver course where knot tying is part of the curriculum. All divers should be certified to the advanced level, which includes training in many practical and needed skills such as use of knots. So, if you're not tied up, why not enroll in an advanced diver program?

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Photos by LARRY CUSHMAN

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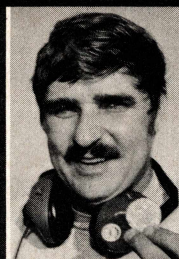
Remember, all commercial diving schools are not alike. Check them out. Visit the school if you can. Look for real commercial diving professionalism and reputation, adequate facilities and equipment, experienced instructor staff, decent housing and living conditions, and, probably most important to you, ask them how they plan to help you get your first job in the commercial diving industry.

If you want to be a professional diver, contact our Admissions Department. Use the Reader Service Card or call us toll free - (800) 321-0298. You'll be glad you did.

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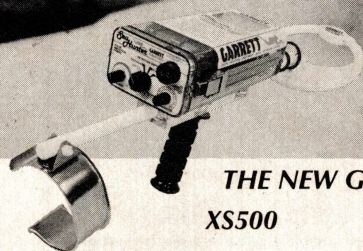
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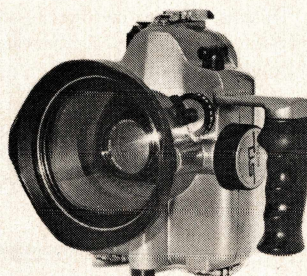
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Diver's Calendar

August 1-October 31 PADI's Sixth Annual Underwater Photo Search/Competition. (Contact: your local participating PADI Training Facility)

August 2-4 Greater Fort Lauderdale Shipwreck Symposium. Films and presentations by celebrities, archaeological training seminars and wreck diver certification. (Contact: Broward County Historical Commission, 100-B SE New River Drive, Ft. Lauderdale, FL 33301)

August 11 Second Annual Treasure Hunt on Cape Cod Beach, sponsored by Diving Enterprises of Cape Cod. (Contact: Diving Enterprises of Cape Cod, Inc., 815 Main St., Harwich Port, MA 02646; (617) 432-9035)

August 25-26 Mid Ohio Divers Swap Meet and Jamboree, Cletus Quarry, Mansfield, OH. Free admission, booths \$4/day for members and \$6/day for non-members. (Contact: Jim Brown (419) 468-7940)

September 7-8 The 20th Annual Underwater Film Festival sponsored by the San Diego Underwater Photographic Society at the Civic Theater, San Diego, CA. (Contact: UPS, P.O. Box 82782, San Diego, CA 92138 or call Dee Miller at (619) 287-4155)

September 7-10 The Eighth National YMCA Underwater Activities Convention will be held at the Casa Marina Marriott, Key West, FL. (Contact: National YMCA Center for Underwater Activities, P.O. Box 1547, Key West, FL 33041)

September 8-9 First Annual Underwater Fun Festival sponsored by the Klamath County Dive Rescue Team. Contests, night dive, chili feed. (Contact: Klamath County Dive Rescue, c/o Sheriff's Department, Court House, Klamath Falls, Oregon 97601)

September 9 Fifth Annual Divers Swap Meet, sponsored by the Santa Ana College Dive Club at the college pool. Everyone welcome, no fees. (Contact: Jim Taylor, 22011-J Rimhurst Dr., El Toro, California 92630)

September 9-14 Marine and Diving Medicine: includes diving workshops, marine biology labs, ear and eye in diving. Appledore Island, Isles of Shoals, Maine. Co-sponsored by Colby College and the Undersea Medical Society. (Contact: R.H. Kany, Director of Special Programs, Colby College, Waterville, Maine 04901)

September 17-21 Second Annual Underwater Management Course, hosted by the Police Department in Lakewood, NJ. (Contact: James T. Carney, c/o Lakewood Police Underwater Recovery Team, 231 Third St., Lakewood, NJ 08701; or call him at (201) 363-0200)

ATTENTION: DIVERS

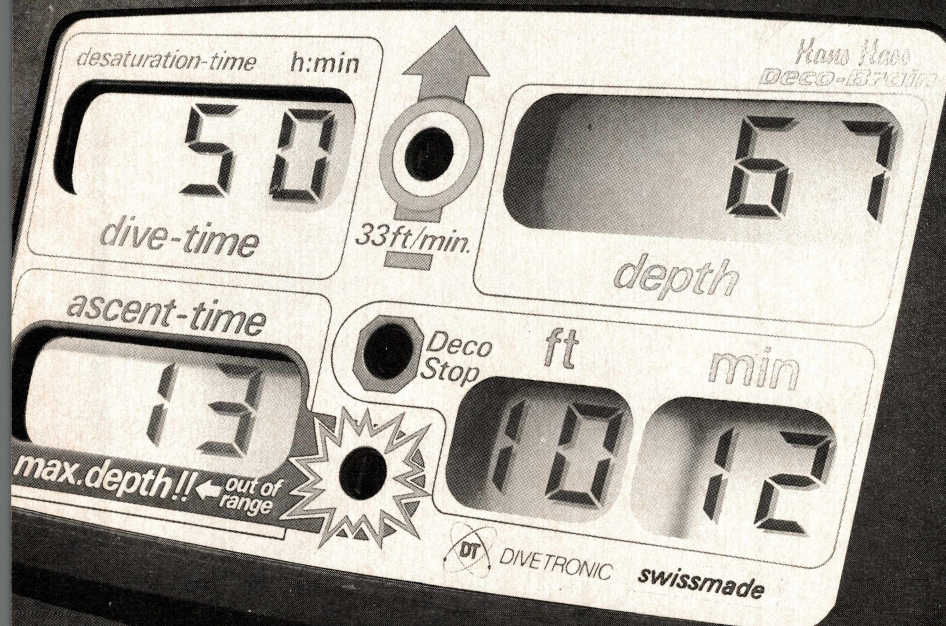


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Film Festivals 'n Symposiums

FT. LAUDERDALE SHIPWRECK SYMPOSIUM

The Marine Archaeological Advisory Council will host a shipwreck symposium August 2-4 at the Bahia Mar Hotel in Fort Lauderdale, Florida. The emphasis of the symposium will be on developing a historical appreciation for local shipwrecks. The treasure hunting perspective will be shown in connection with the archaeological importance of the shipwrecks.

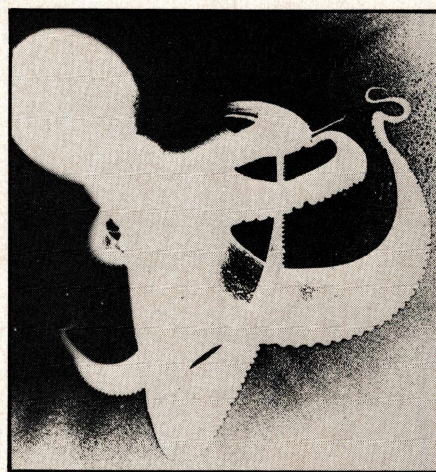
The symposium will feature archaeological films and lectures on shipwreck surveying and excavation techniques, artifact preservation, and the use of state-of-the-art tools. These films and lectures will be combined with actual on site dives and the survey and excavation of two 19th century shipwrecks.

Qualified participants can obtain certification as wreck divers or archaeological divers through PADI, NAUI and YMCA, depending on their level of participation at the symposium. The cost of the symposium, four wreck dives and the beach party will be \$120. Lodging is available for \$25 per night, per person, double occupancy at the Bahia Mar Hotel.

For information contact the Broward County Historical Commission in Ft. Lauderdale, (305) 765-5872.

WORLD FESTIVAL

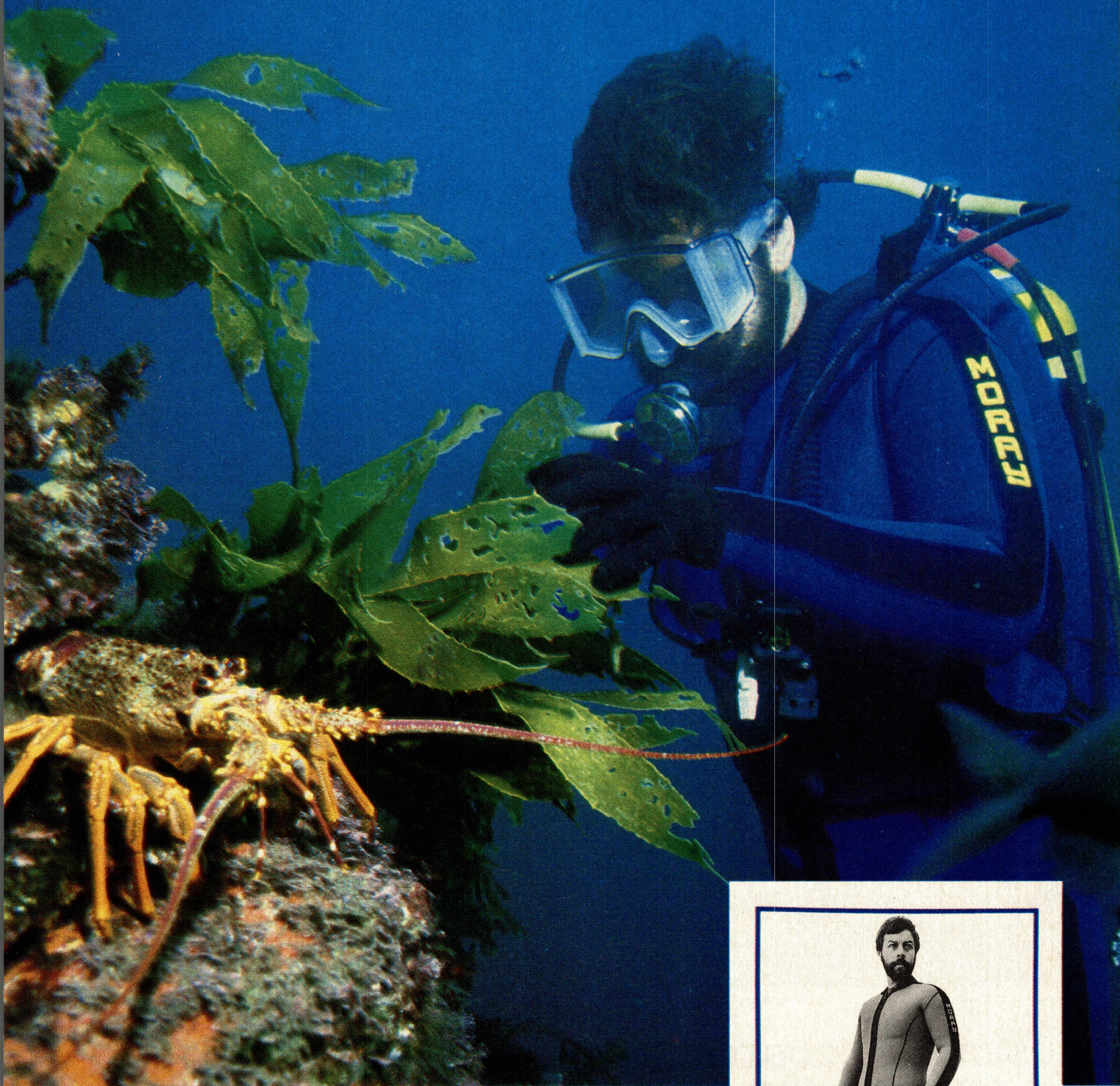
The 11th World Festival of Underwater Pictures will be held in Antibes, France December 5-9. Competition will be open to non-professionals for movies; slides;



slide shows; color and black and white prints as well as a special open subject project. Video competition will be open to professionals or amateurs.

For information contact: Spondyle Club, Daniel Mercier, World Festival of Underwater Pictures, Fort Carre, 06600 Antibes, France.

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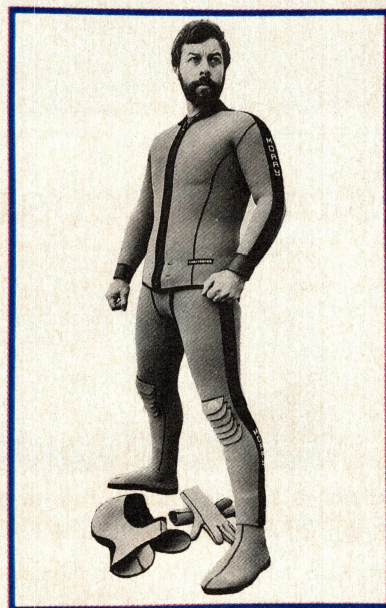


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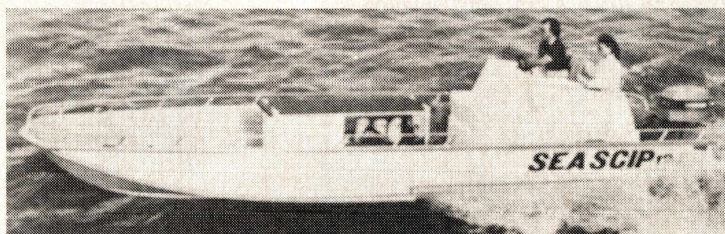
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SAN DIEGO FESTIVAL

The San Diego Underwater Photographic Society will host the 20th Annual Underwater Film Festival on Friday and Saturday, September 7-8. Both evenings will have entirely unique programs with films by Jack McKenney, Stan Waterman, Ozzie Wissell, Dick Anderson and Chuck Nicklin just to mention a few. There will be four films and four slide series each evening. In addition to the films and slides there will be a print display and an extensive display of underwater photographic equipment ranging from antique to modern.

The master of ceremonies for this two evening event will be Jack McKenney. Jack will have his new film, *Treasure Diving*, a sequel to *I'd Rather Be Diving*.

Tickets will be available at the Civic Theater, Ticketron and dive stores in the San Diego Area.

NEW ENGLAND PHOTO CONTEST

The first New England Underwater and Land Photography Contest is underway. It is sponsored by Seamark and the New England Aquarium to benefit the Cotting School for Handicapped Children.

Categories include: U/W close-up, U/W normal/wide angle and above water scenes relating to New England coastal waters. All slide entries must be made by August 15.

For more information contact Seamark Photography Contest, c/o Andrew Martinez, P.O. Box 770, Ipswich, Massachusetts 01938.

MONTANA FESTIVAL

The Prairie Dive Club of Glasgow, MT is sponsoring the 1984 State Dive Festival on Labor Day weekend, Sept. 1-3. There will be three days of diving, including night dives as well as games and prizes. The event will take place at Fort Peck Lake, 19 miles from Glasgow. All certified divers are welcome.

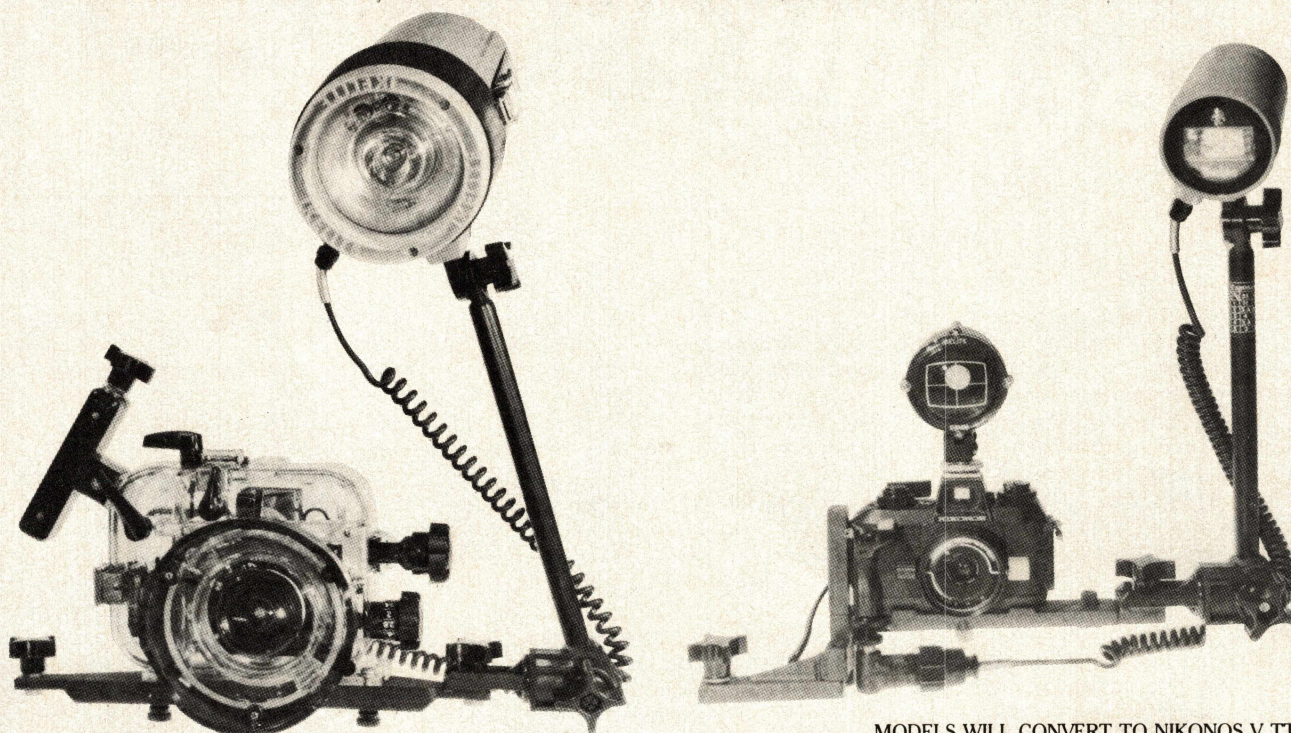
For more information contact Clay Berger, President, Prairie Dive Club, Box 1153, Glasgow, Montana 59230.

SEE & SEA CME SEMINAR

See & Sea Travel is offering a continuing medical education seminar as part of its February 8-20, 1985 great white shark adventure in South Australia. Medicine in the Marine Environment is the title of the seminar; a similar program is offered by Drs. Ken Kizer and Paul Auerbach at other See & Sea locations.

Physicians and other members will live aboard a 65 foot vessel for eight days searching for great white sharks at Dangerous Reef and other sites. Three large shark cages can accommodate as many as nine divers simultaneously.

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SUBSTROBE 75	M/A	45	f/5.6	110°/15mm+	Non-removable ni-cad incl. (CI)	Full 1/2	75 40	150 300	3 sec 2 sec	Yes	Yes
SUBSTROBE 150	M/A	60	f/8	110°/15mm+	Removable ni-cad incl. (CNI)	Full 1/2 1/4	150 75 40	150 300 600	6 sec 3 sec 2 sec	Yes	Yes
SUBSTROBE 225	M/A	75	f/8-f/11	110°/15mm+	Removable ni-cad incl. (CNI)	Full 1/2 1/4	225 110 55	120 240 480	6 sec 3 sec 2 sec	Yes	Yes

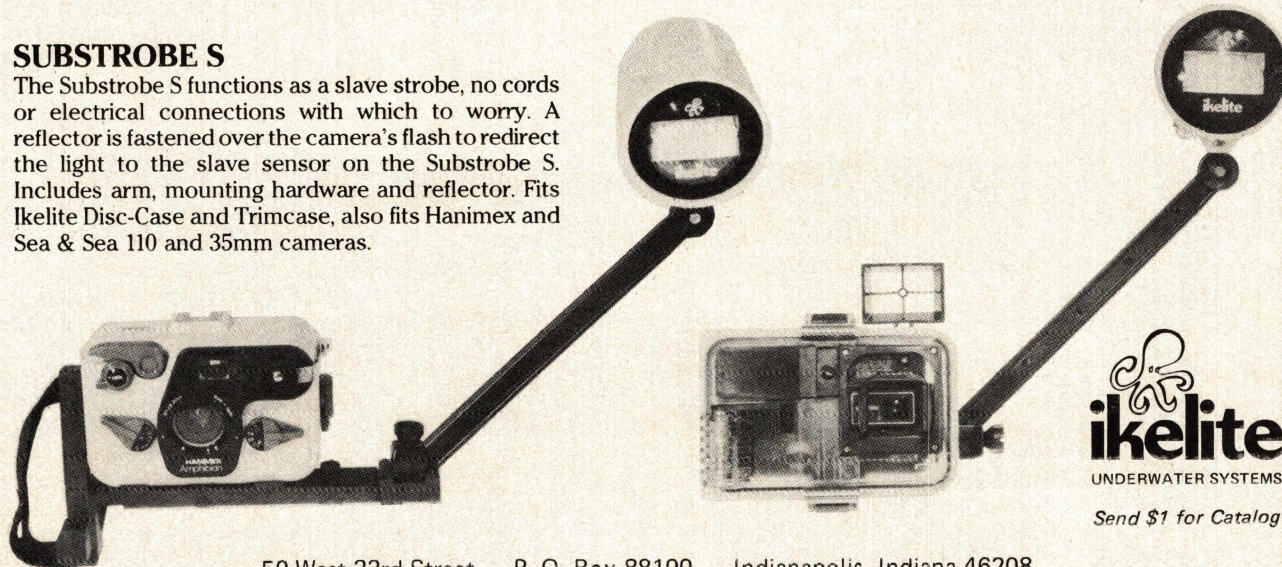
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CI: Charger Included

CNI: Charger is NOT INCLUDED

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Technifacts

BY E.R. CROSS



Each year an estimated 1,000 sport divers make the decision to go commercial. For many the transition will be successful. To be reasonably sure of success, potential commercial divers should be aware not only of what diving schools can and will teach but of trends in both the kinds of jobs they are expected to accomplish and equipment being developed. Keeping up with what is happening in the world of underwater work is critically important to planning a successful career in this rapidly changing field.

The rapid progress made in recent years in the acquisition of scientific knowledge about the oceans and about working in the oceans has been made possible because of the sophisticated research hardware that has been developed. A great deal of this technical explosion has been to meet the needs of activities associated with the exploration and exploitation of offshore oil. That this field of activity is so vast and is still expanding so rapidly on a worldwide scale is remarkable when it is considered that the first offshore well was drilled only 37 years ago. The Kerr-McGee company drilled the first oil well in the sea in 18 feet of water off the Louisiana coast on November 14, 1947; a well that went on to produce nearly one million barrels of oil and millions of cubic feet of gas. Note: There were other earlier "on the water" wells drilled from piers extending over the water or from barges sunk to the bottom in shallow water.

Jack-up drill rigs, developed a few years later, let the offshore oil industry push deeper. Then came the semisubmersibles for even greater drilling depths and, finally, the dynamically positioned drill vessels that permitted successful work in more than 5,000 feet of water.

From the beginning of offshore oil work commercial divers played an important part in the successful exploration and production of oil from beneath the sea. As their work went deeper, knowledge of diving physiology and life support equipment for working at greater and greater depths continued to improve.

For working deeper than about 200 feet mixed gas diving rigs, using a breathing mixture of helium and oxygen, were developed. Then came a tri-mix in which a small percentage of nitrogen was

added to the helium and oxygen. This helped combat some of the physiological syndromes of very deep diving. Divers could now work at 600 feet or so. To survive in cold water at that depth several types of heated diving suits were developed. This was still not enough. Wells were being drilled even deeper. Saturation diving was born to cope with depth.

In saturation diving divers are put under pressure equal to the depth at which they will work, or nearly so, and remain at that pressure for up to nearly a month or until the job is completed. Then, following days of decompression, they are brought back to surface pressure of one atmosphere. Saturation diving was successful to depths of more than 1,200 feet.

Other factors now limited the safe working depth of the commercial oil field divers. Pressure was too great at those depths and physiological malfunctions were apparent. Reactions were slowed. Neurological symptoms were present. Mostly, however, with the great depth of the water, drill rigs and production systems had to be much larger and needed heavier equipment and material to be safe. Underwater jobs required more mobility on the part of the divers and a greater number of divers for longer hours underwater. Manpower simply was not enough to cope safely with the steadily increasing depths and resulting hazards.

Attempts were made to develop diverless wells with some success. It appears now that diver manned one atmosphere and unmanned remote controlled vehicles may be the viable alternative work methods that can provide the improved services the oil industry needs.

For the past four years there has been a proliferation of such units. In a 1981 listing of 97 worldwide diving contractors 16 percent listed services using either ADS or ROV systems. In a 1984 list of 101 worldwide diving contractors (mostly the same companies as in the 1981 list) 32 percent had such equipment available for use and were advertising the advantages of using one atmosphere systems.

ONE ATMOSPHERE SYSTEMS

Attempts to work underwater with one atmosphere diving systems predate conventional diving gear, but with little to very limited success. Success today is phe-

nomenal. There are two kinds of one atmosphere dive systems; manned and unmanned. The manned systems can be divided rather broadly into one atmosphere dive suits and submersibles.

The one atmosphere dive suits are nothing more than an articulated diving bell with mechanical manipulators by which the diver/operator can perform various functions. No one system could be designed to do all the kinds of work these units are now called on to perform. However, there are enough designs that almost any required job to depths of at least 2,000 feet can be accomplished.

The ADS units include the JIM and SAM walk-about rigs and WASP and OMAS systems that are propelled by thrusters. These are probably the most talked about units. JIM has been used to complete jobs in depths of more than 1,500 feet. SAM is similar to JIM but has additional articulation and is made of different material. WASP is a JIM without legs but otherwise having generally similar characteristics. It has a working depth of about 2,000 feet. In JIM and SAM units the diver can "walk" across the ocean floor. In WASP and OMAS rigs multiple thrusters are used for maneuverability. Manipulators in all units are designed to provide greater power than could be attained by a diver and permit almost complete control in any direction.

Originally it was thought that ADS would be used mostly for observation. As divers became more adept at handling the systems, and as more powerful and more complex manipulators were developed, there was no reason for not taking on more complex jobs. JIM and WASP have both been used on work sites not only to inspect and record via underwater photography and videotape, but to handle complicated tools, thread pipes, bolt and unbolt flanges and to close valves. Basically the usefulness depends on the training the operator has attained.

Manned one atmosphere submersibles resemble and are handled like miniature submarines. Perhaps the best known of these is *Alvin*, first commissioned in 1964 and used for several widely publicized projects. *Alvin* has depth capability of 11,500 feet. Other one atmosphere submersibles include *Deep Quest* with depth capability of 8,000 feet and the complex

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TECHNIFACTS

Aluminaut. A total of at least 70 different submersibles, including 25 diver lock-out rigs, have been built worldwide.

While most of the manned systems have common working systems there are some differences depending on the work assignment. It does seem to me that most of the manned vehicles would best be operated by skilled, well qualified divers, rather than by non-divers. This seems particularly so in the diver lock-out systems and in the offshore oil industry where working knowledge of both underwater conditions and with the job itself is best shown by experienced divers.

REMOTELY OPERATED VEHICLES

The ROVs are another story. Designs have proliferated in these even more than in manned units. Each ROV is designed to perform one or more functions. Initially, ROV capabilities were slanted toward inspecting deepsea pipeline installations. In more recent years the trend has been toward more complex inspection and maintenance work on production plat-

forms and less with pipelines.

Basically, ROVs are designed for either inspection work or for maintenance projects. For example, Hydro Products RCV-225 is primarily an inspection vehicle while the RCV-150 is primarily a work designed rig. It has been estimated that there are approximately 370 ROVs in use worldwide as of mid 1984. Some are designed for the deepest water in which drill rigs can work, possibly in excess of 10,000 feet. Others are designed for shallower work.


What kind of jobs can the ROVs perform? According to numerous advertisements in marine oriented magazines, almost anything. Provided, that is, that you have enough models of ROVs.

One unit, Solus Ocean Systems' Dual Hydro ROV has tools to cut wire rope, a cathodic protection electrical potential probe, a soft line (rope) cutter, a cavitation cleaning system, and can handle several hydraulic tools. The larger Hysub of the same company has similar capabilities but has more powerful thrusters for work in stronger currents. The Dual Hydro and the Hysub both have one, seven function and one, five function manipulators that permit considerable dexterity with tools and work systems.

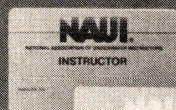
The Hydroproducts RCV-150 work vehicle can connect and disconnect wire slings, position objects, cut wire rope,

clean debris from around platforms and clean platform members to white metal with a 20,000 psi waterblaster that cuts sea growth and corrosion.

Ametek's Scorpio ROV has been operational for five years. It is designed to be used for observation and inspection, drill rig support, platform cleaning, sea floor surveying and in subsea completion and inspection. Ocean Search Inc. developed a unit called Deep Ocean which is designed primarily for oceanographic surveys and for search and recovery to depths of 6,000 feet. Taylor Diving advertises its fleet of ROVs as ranging from "flying eyeballs" to the "most sophisticated work vehicles available." And, that just about describes the variations in the capabilities of all ROVs.

Prices for ROVs run from near \$225,000 to well over \$1.5 million. Many models are now off-the-shelf items. It is true they are performing many of the jobs that were once the function of divers, but the trend is more toward using them as a sophisticated tool for divers or as a diver support item rather than to replace divers. Particularly, this is true at depths of 600 feet or less. As one writer stated, "You just can't beat the dexterity and the reasoning of a Mk 1, Mod. I human being." Particularly, this is true of a Mk 1, Mod. II human trained as a commercial diver. 

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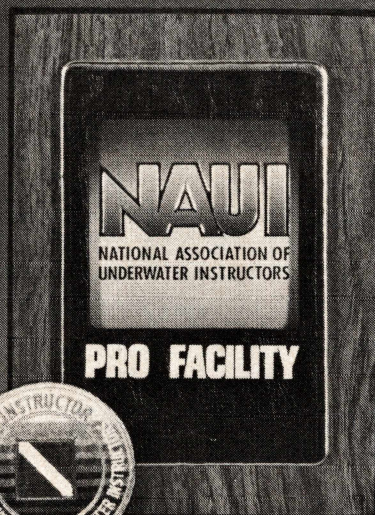
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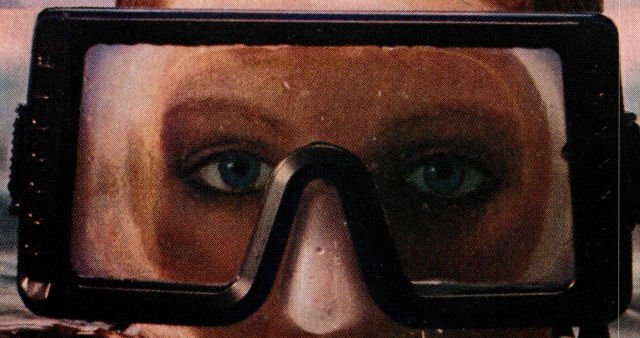
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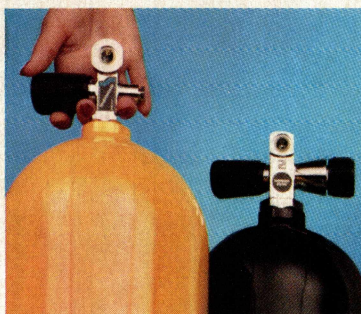
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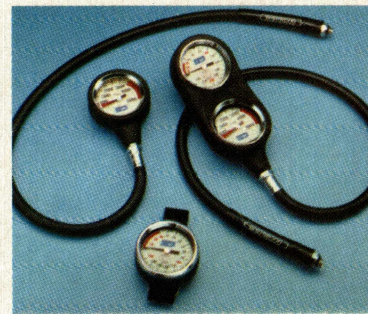


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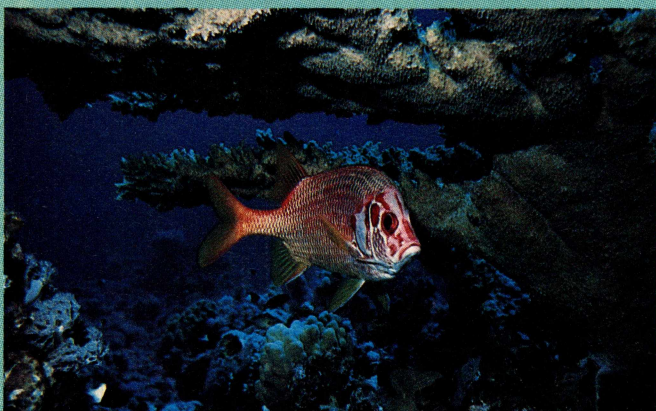
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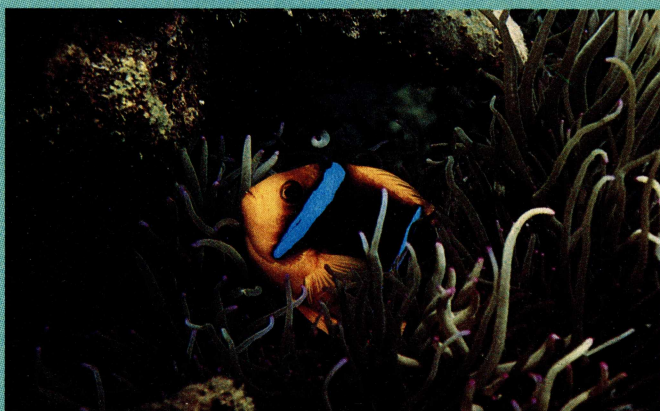
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Grand Prize Photo Title: Home Sweet Home/Photographer: Jay Smith, Tulsa Oklahoma/Submitted by: Inland Divers, Tulsa, Oklahoma



Title: Jewel/Photographer: Ruth Jacobson, New York, NY/Submitted by: Orbit Marine Sport Center, Bridgeport, CT



Photograph Title: Peek-a-Boo/Photographer: Ted Nizialek, Tonawanda, NY/Submitted by: Niagara Scuba Sports, Buffalo, NY


Winners of 1983 PADI Photo Search

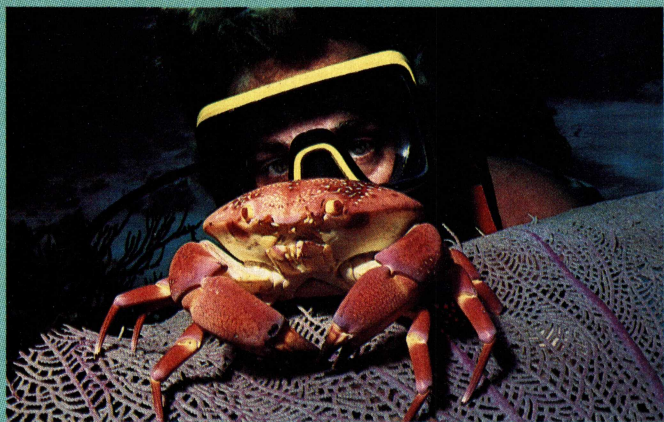
BY JEFF MONDLE

The winners of the Fifth Annual PADI Underwater Photography Search/Competition have been chosen. With a record number of entries submitted from all over the world, the 1983 competition was fierce. Winners were chosen in judging based on technique, composition and lighting.

Designed to provide non-professional underwater photographers with the chance to win prizes and publication opportunities, the Sixth Annual Search/Competition is now underway. Contestants must enter one of the many local contests held between August 1 and October 31 at participating PADI Training

Facilities. Local winning slides are then submitted to PADI Headquarters for regional judging. Regional winners, in turn, compete for the Grand Prize, which includes a deluxe, one week vacation for two with Dive Bonaire at the Flamingo Beach Hotel and an Encore two projector dissolve unit. Custom prints from Scuba Chrome are presented to all regional winners.

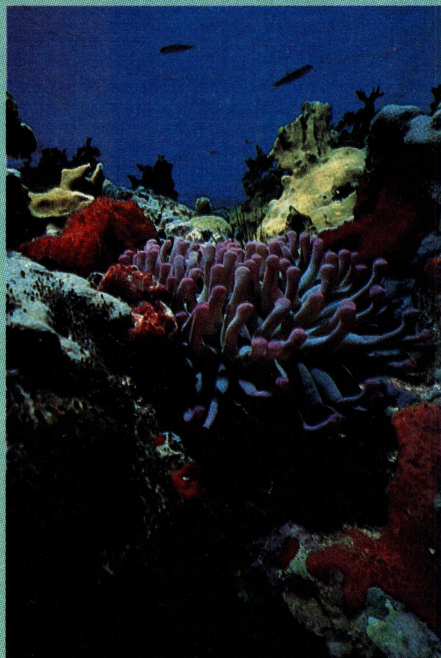
For complete information on the 1984 contest, along with a list of participating PADI Training Facilities, contact PADI Underwater Search/Competition 1984, 1243 East Warner Avenue, Santa Ana, CA 92705; (714) 540-PADI. 



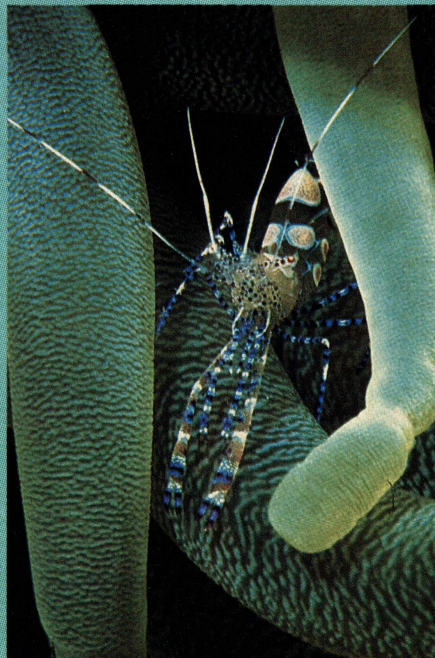
Title: Looking Me Over/Photographer: Bev Schultz, Richmond, VA/Submitted by: Chesapeake Diving Center, Hampton, VA



Photograph Title: The Reef/Photographer: Mike Rouser, Indian-lantic, FL/Submitted by: Ocean Adventures, Port Canaveral, FL



Title: Looking Up/Kathie Mullins, Erlanger, KY/C & J Scuba Supply, Dayton, OH



No Title/Photographer: Bruce Patrick, Eagan, MN/Scuba Center, Minneapolis, MN



Reflections/Janie Wilson, Glen Ellyn, IL/Underseas Scuba Center, Villa Park, IL



Eyeball to Octopus/Peter Hartlove, Longmont, CO/High Ctry. Divers, Aurora, CO



Cayman Colors/Photographer: Pete Carta, Alhambra, CA/Ocean Antics, Ventura, CA



Title: Spines/Photographer: Herb Segars, So. River, NJ/Bonaire Scuba Center

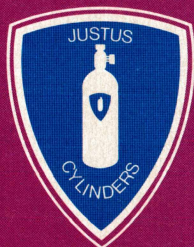
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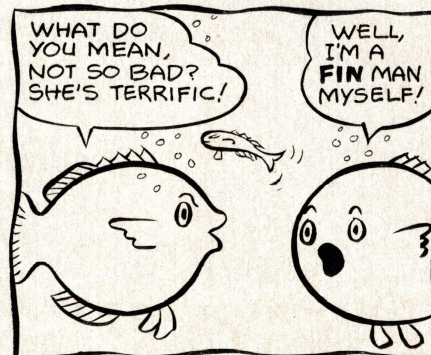
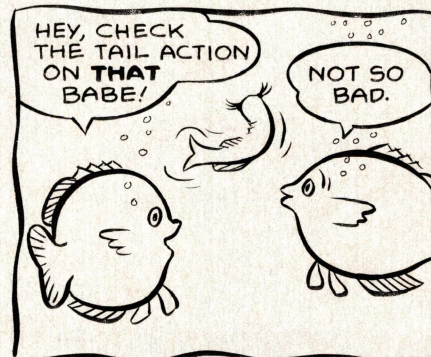
A group of nautical archaeologists, maritime historians and ocean engineers recently formed the Maritime Archaeological and Historical Research Institute (MAHRI).

The institute pools resources of professional maritime researchers, educators and the interested public. Research projects will include public grant, private grant and contract supported scientific research. Projects for 1984 include the research and publication of the already excavated Ronson ship site, a search for a 1635 English merchant ship offshore Maine, and support of the clipper ship *Snow Squall* project in the Falklands.

Membership in MAHRI is open to the public. Members receive a biannual newsletter, invitations to special events and a chance to participate in some of the research projects sponsored by the institute. For more information contact: MAHRI, 224 Route 130, Bristol, Maine 04539.

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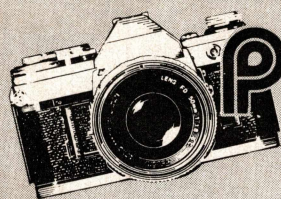
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Local winners are entered into the International Competition. The eleven Regional Winners (ten U.S. regions, one international) chosen receive custom 16 x 20-inch color prints of the winning slides (compliments of Scuba Chrome); publication in *Skin Diver Magazine* and *The Undersea Journal*; and entrance into the Grand Prize judging.

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1. The PADI Underwater Photography Search/Competition is open to all amateur photographers. **Only underwater photographs will be accepted.**
2. **All entries must be submitted to a participating facility for local judging. Local winning entries will then be sent to PADI Headquarters for international judging. Applicants may enter as many photographs as they wish; photographs may have been taken any time with no geographic restrictions.**
3. Winners shall be chosen in one category: color slides. **Participant's name, address, telephone number, facility name, and the title of the photo must be printed clearly on each entry.**
4. An entrance form and a \$4.00 fee per entry to the participating Training Facility shall accompany all photographs submitted. The completed form acknowledges reprint rights for PADI International when proper photographic credit is given. The utmost care and handling will be given all entries, but no responsibility will be assumed by PADI International or any PADI Training Facility. Photographers retain ownership, and all entries will be returned after the judging has been completed.
5. Local judging will be done by PADI Training Facility staff members; international judging will be done by the PADI Underwater Photography Search/Competition Committee.
6. **Winners will be chosen by a point system based on technique, lighting and composition.** Vertical format is preferential. Decisions by the judges will be final.
7. The Search/Competition shall begin August 1, 1984 and end October 31, 1984. Regional and Grand Prize Winners will be announced in Spring 1985.

Rx

FOR DIVERS

BY FRED BOVE, M.D., PH.D.

Last month we discussed hypothermia and the consequences of cold stress. This month we will go to the other end of the temperature spectrum and discuss hyperthermia. Diving is not usually a sport which causes problems with too much heat. Usually, heat is lost from the body because the water is colder than the skin.

Hyperthermia is not common to water exposure itself, except in rare instances. If water temperature reaches 85°F there is little or no difference in temperature between the skin and water and heat cannot be transferred to the water. This situation can become dangerous if heavy exercise occurs in very warm water.

The more important problem with hyperthermia in diving, however, is on the surface when preparing for a dive or when the diving is finished. Consider a typical dive in the North Atlantic, a location with which I am familiar. In the summer, the boat leaves port about 7:30 am and travels for about two hours to get to a dive site. Once the boat is underway, everyone begins to get dressed in a full wetsuit including hood, gloves, boots and often a double layer of neoprene over the chest and back. About an hour into the trip, the sun is high and the temperature reaches 85-90°F. Sitting in the sun in a full wetsuit, waiting to arrive at the dive site, there are occasionally several divers who begin to show signs of hyperthermia. After two hours in the sun, there may be several sick divers. Other examples abound. The problem of hiking long distances over land to reach a lake or quarry while dressed in a full wetsuit also involves hyperthermia.

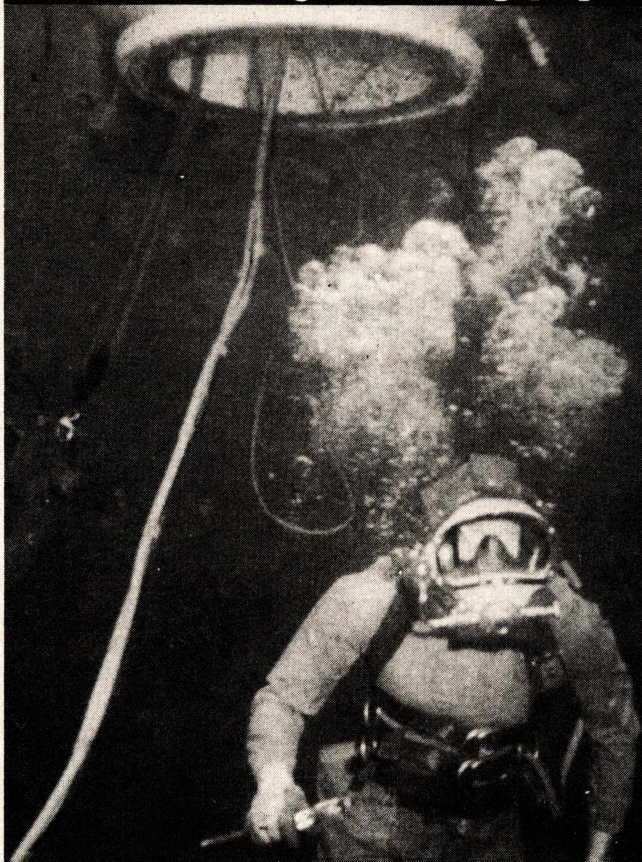
An important factor which increases the risk of hyperthermia is dehydration. Divers are prone to dehydration during dives where the surface temperature is high and exercise or work is involved. It is difficult to detect a state of slight dehy-

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Rx FOR DIVERS

dration. A little thirst is the signal to drink water, but often we ignore this because of the press of getting ready to dive and getting in the water. Dehydration increases your chances of becoming hyperthermic because of the reduced volume of blood available for circulation into the skin where heat is exchanged to the environment. Dehydration can also increase your chances of getting decompression sickness because of inadequate flow of blood to muscles and, thus, slow removal of excess nitrogen from the tissues. For all these reasons, you should make a strong effort to maintain adequate water intake when diving whether in hot or cold environments. Note that alcohol is a diuretic—it causes water to be lost through the kidneys and can make the problem worse.

Effects of heat on the body can take several forms. Collectively, when associated with medical problems, we call them hyperthermia. The most common problem with heat is heat exhaustion. In this disorder, the body temperature rises above normal (98.6°F) because of excess heat generation from work or exercise; inability to remove heat because the environment is hot; heat retaining dress; or warm water. The victim becomes dizzy and disoriented, the blood pressure falls, the pulse is rapid, hyperventilation occurs, and often the victim loses consciousness because of the inability of the circulatory system to maintain blood pressure at a normal level. The victim sweats and usually will recover rapidly if allowed to lie in a cool area and given fluids to replace the water lost from sweating. Often the fluids must be replaced intravenously and this is best done in a hospital. This disorder is very common in runners who race in hot climates when they are not heat acclimatized. Divers can develop the same problem in hot weather when they work in a full wet or drysuit on the surface.

Heat stroke is a more serious form of hyperthermia and can cause death. The stimulus for heat stroke is also too much exposure to heat. Usually this is owing to prolonged work or exercise in very hot environments. It is associated with unconsciousness and very high body temperatures (105-108°F) and results in heart, brain and kidney damage which may cause death. Treatment is rapid cooling, and should be done in a hospital, under medical supervision. If a diver develops any type of hyperthermia, he or she should be placed in a cool, shady location, given fluids if conscious and cooled with water poured over the skin until the body temperature is reduced to normal. If a diver is fully dressed, remove

(Continued on Page 112)

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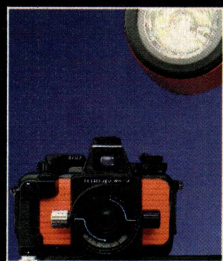


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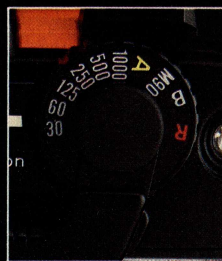
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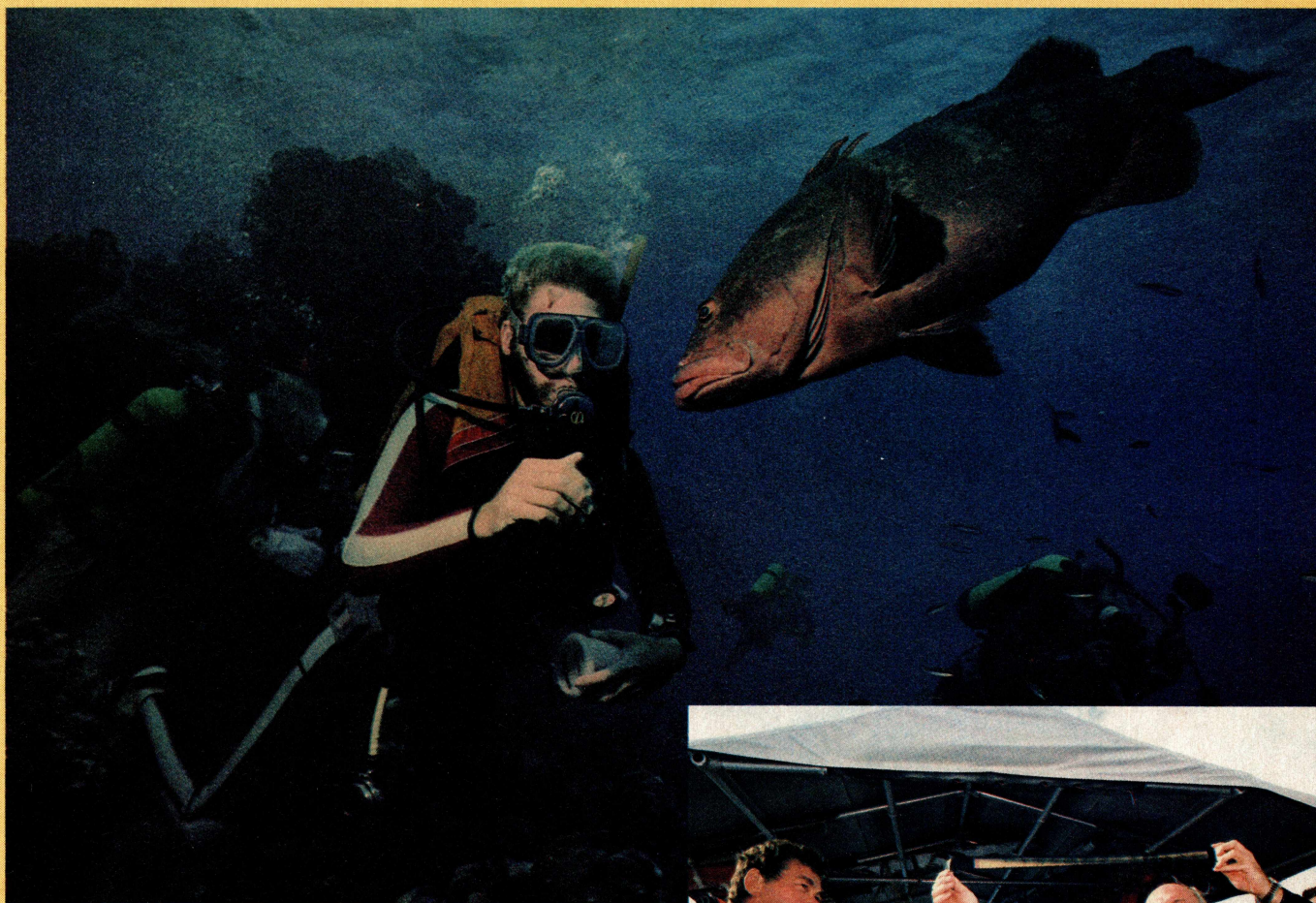
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INSTANT SLIDES

Polaroid's Polachrome for on site equipment test and instructional feedback

TEXT AND PHOTOGRAPHY BY
PAUL SCHUTT AND
LYNN FUNKHOUSER



The impossible has taken a little longer, but on the the market today are three new instant 35 mm films from Polaroid. The films are in standard 35 mm cartridges that can be exposed in any 35 mm camera including the Nikonos series. The film feels thinner and looks a little different than other 35 mm films. The Polaroid Autoprocess System consists of the three types of film, a cigar box sized Autoprocessor, a new type of plastic slide mount and a very simple and cleverly designed slide cutter/mounter. The processor and mounter together weigh about a pound.

A processor, mounter, box of slide mounts and a roll of film can be purchased for less than \$100 in most professional photo stores. In addition to the col-

or slide film, Polachrome, there is a continuous tone black and white film, Polapan and a high contrast line film for title slides and graphics, Polagraph.

HOW TO USE POLACHROME

The color slide film has an ASA rating of 40 which makes it about three-quarters of a stop slower than the Kodachrome or Ektachrome 64 films used by most serious underwater photographers. Each film cartridge is sold with a processing pack which is to be used after you expose the film. The actual processing consists of loading the processing pack and the exposed film cartridge in the Autoprocessor, throwing a lever on the side of the processor, turning a handle for about 15 seconds, waiting 60 seconds, returning

the lever to its original position and cranking the handle again for about 15 seconds to rewind the film. At this point your film is completely processed, dry and ready to mount. You can open the processor and take out the original cartridge which now contains the finished film. If, like me, you can't wait to see your results, just pull the film carefully out of the cartridge and hold it up to the sky or any bright light.

The film is quite fragile so handle it very carefully and mount it right away. The cutter/mounter is very easy to use. Since you never have to actually touch the film it helps avoid fingerprints or other damage. Learn how to use the mounter correctly and keep an inward pressure on the cutter bar when using it: The bar must

be held carefully against the cutting edge. It takes about six minutes to mount a full, 36 exposure roll of film.

EXPOSURE TESTS

Our first underwater testing was done at Rum Cay in the Bahamas. Our first above water roll was shot with flash at the recommended ASA. The results appeared normal so we then exposed the first roll underwater at 40 ASA. The results were a bit disappointing on one roll so we shot a second roll, this time bracketing at a half stop and a full stop extra when compared to our normal exposures for Kodachrome and Ektachrome 64.

All of the frames were definitely overexposed. The next day we shot another roll and exposed it just as we would have exposed a roll of Ektachrome 64. This time the results were much better and some of the frames looked quite good under the magnifying glass. This film is designed for projection viewing, not for direct viewing on a lightbox. This means

vented, additive color, silver diffusion, transfer process. Additive means that the image is made up of separate images in red, blue and green bars that add together to form the complete color image when the transparency is viewed or projected. Overlying the film emulsion is a pattern of color filter bars. Light from the camera lens passes through the filter bars to a black and white film behind the filters. In viewing or projecting the image the light path is reversed. You are actually looking at a black and white image through the same color filter bars. These red, blue and green images add up to a full color image in your eye or on the projection screen.

If you were to greatly magnify the image you would see the actual filter bars running the length of the frame. There are more than 300 of these triplet filters per vertical inch. This filter structure causes a loss of brightness when the slide is projected. Similarly, the breakdown of the image into three separate images causes

an additional loss of light both when the picture is being exposed and again when it is viewed or projected. No matter how well exposed or what the subject matter, a Polachrome slide will never look as bright as a Kodachrome or Ektachrome slide when viewed side-by-side.

PERFORMANCE

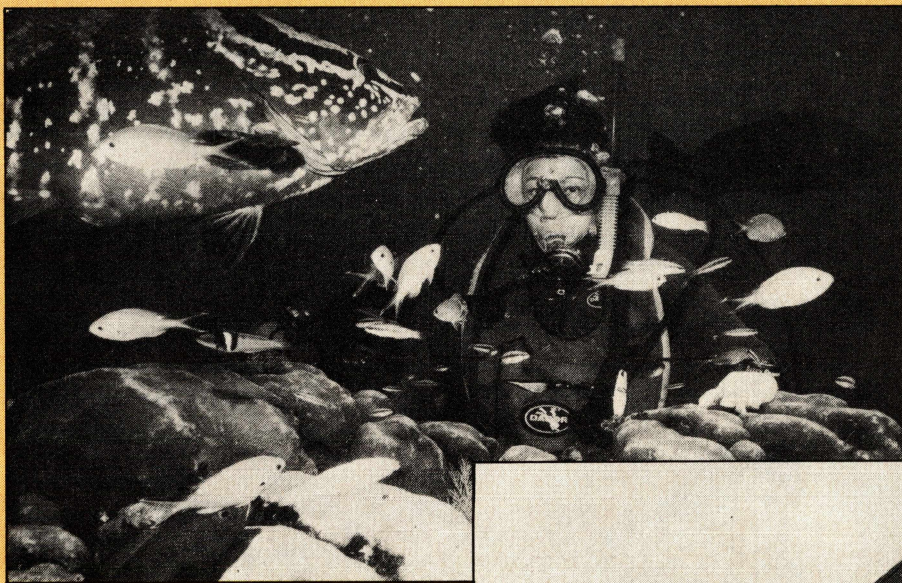
Polachrome is not a replacement for Kodachrome or Ektachrome. It is not a film to use for your entire vacation or dive trip. It is great for test rolls; to see if all of your equipment is working properly—or just for fun.

The film can be exposed at any non-extreme outdoor temperature. The processing, however, should be done between 60 and 85°F. Processing at the high end of the range causes an additional loss of contrast and an apparent increase in the grainy appearance of dark or dense areas of color. At 90°F we had some processing problems. The film actually jammed while being rewound back into the cartridge. This was apparently caused by the gel, contained in the processing pack supplied with each roll of film, becoming too fluid at a temperature higher than the recommended limit.

Our solution to the jamming and loss of contrast was to refrigerate the processing packs. We allowed them to warm up for 10 to 15 minutes before use. The actual temperature was in the 65 to 70°F range.

HOW WILL POLACHROME BE USED?

Polaroid slides project best on a clean, glass beaded screen. Good quality prints can be made with most instant slide printers. You can also make very nice quality

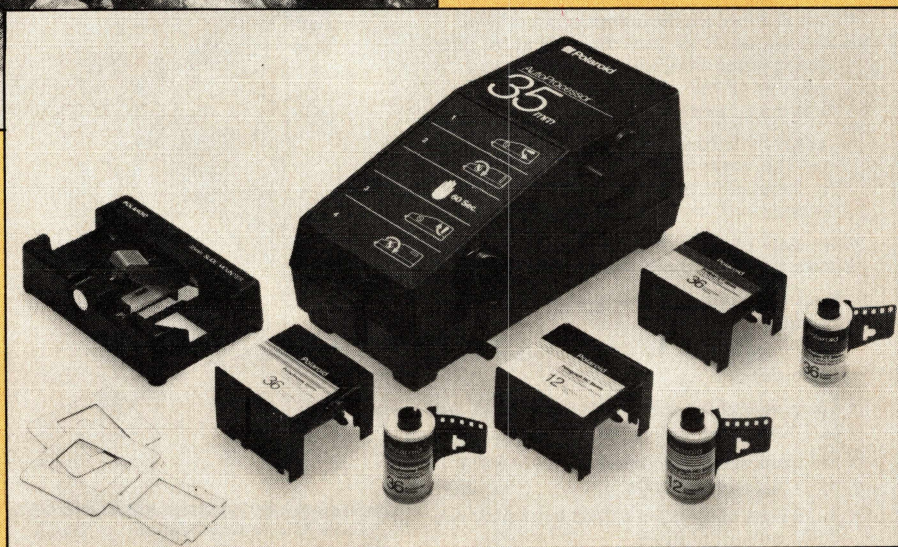


that when you look directly at the film after processing the first impressions can be a bit misleading. The cause of this problem is that Polachrome is not a continuous tone film, but actually breaks the image down into tiny bars of color somewhat the same way that the color pictures in this magazine are broken down in very tiny colored dots.

After some additional rolls were exposed both above and below water it was apparent that the effective ASA rating of the film was about half a stop faster when used underwater with electronic flash than above water in daylight. We have not discovered any reason for this.

HOW DOES THE FILM WORK?

The film forms images by a Polaroid-in-



Polaroid's new Autoprocess 35 mm system includes a compact manual processor, a slide mounter (far left) and special slide mounts. Three processing packs are provided with the three types of Polaroid film compatible with the system: Polachrome color transparency film, Polagraph high contrast black and white transparency film, and Polapan continuous tone black and white transparency film. All can be processed in minutes.

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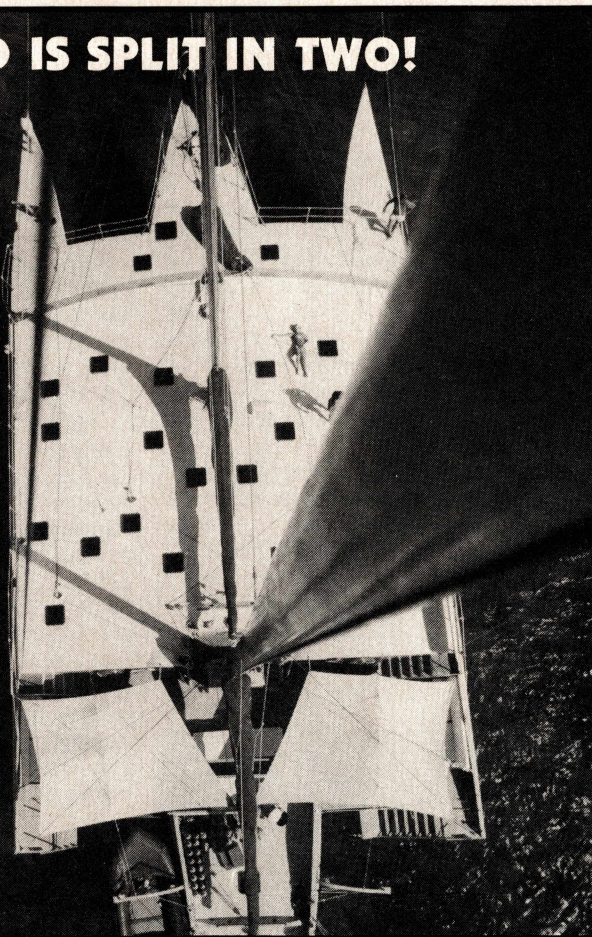
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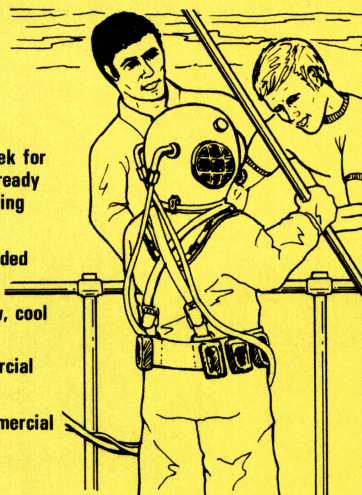
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POLACHROME

enlargements on any direct positive material such as Cibachrome or the Ektaflex reversal material. There is a limitation to the size of direct enlargements because of the color bars. There is no problem on prints up to 16 x 20 inches in size. On larger prints the individual color bars will be recognizable on close examination. You can duplicate any of the Polaroid slide films on conventional slide film. Because of the filter bars, duplicates of Polachrome slides on Polachrome film may display a moire pattern.

The first obvious use of the new films will be for teaching photography where the immediate feedback of the quickly available finished slides will speed up the learning process. Similarly, the fast feedback will be very helpful when testing new equipment or for checking the performance of flash units and other underwater camera gear in remote locations. We plan to carry Polachrome and Polapan on all future Helix photo dive trips for both equipment checking and teaching. We will also have some fun in remote areas such as the out-islands of the Philippines where we can project slide shows in the evening.

I do not think the films will be used much for publication. I suspect that the high contrast black and white film, Polagraph, will be used a lot for last minute title slides as well as charts and graphs. Polagraph also has some very interesting possibilities for use in creating posters and other artistic effects. The limited latitude and apparent graininess will limit the usage to situations where speed is more important than optimum quality.

The Polapan continuous tone black and white film is good enough for most uses. The difficulty, or maybe I should say, the unfamiliarity, of many workers with the technique of working from a black and white positive instead of a negative will limit the use of this film at first. The fine grain structure and latitude make it a material to be used. I am sure that creative U/W photographers are going to have lots of fun with the Polapan film.

NAUI DIRECTORS

John Englander was reelected to the NAUI board of directors and Lyn Nelson was chosen to fill the board seat vacated by Bill High, who did not seek reelection. Both will serve four year terms and will serve concurrently as members of the NDA board of governors. They were seated on the board at the annual meeting in January in New Orleans. Englander was elected board president and Nelson, vice president. Incumbent board member Patricia Scharr-Mavec was renamed secretary and incumbent Mark Flahan was chosen to serve as treasurer.

SCUBAWOMEN DIVE

The first Scubawomen's dive will take place Sunday, September 2 at Barnegat Light, Long Beach Island, New Jersey. With Captain Kathy Littel of the *Dolphin*, there will be a two wreck trip for class A and B divers. Capacity of the boat is 12 divers.

The purpose of the Scubawomen's trip is to offer an educational experience for women who want to develop or hone their diving skills in a relaxed, non-competitive atmosphere. Newer divers or divers who want additional experience in North Atlantic waters are encouraged to participate. Call Luba Fineson evenings at (914) 779-4280 to sign up or for further information.

YMCA CONVENTION

The Eighth National YMCA Underwater Activities Convention will be held at the Casa Marina Marriott, Key West, Florida September 7-10. There will be diving, workshops, papers, exhibits and much more. The event is open to all divers and others interested in underwater activities. For information write: National YMCA Center for Underwater Activities, P.O. Box 1547, Key West, Florida 33041.

UPS COMPETITION

The Los Angeles Chapter of the Underwater Photographic Society is again sponsoring its International Underwater Photographic Competition. Entries from all around the world are invited in seven categories covering prints, slides and movies. The deadline for entries is October 13. A plaque and \$50 will be awarded for first place in each category, with medals going to second and third place winners. A plaque and \$100 will be awarded best of show.

Further details and competition rules can be obtained by writing to the competition chairman, Gene Vincent, Underwater Photographic Society, P.O. Box 7088, Van Nuys, California 91409.

IMAGES TO IMPACT

Images, Images, Inc., the primary marketing agent for the Stephen Frink Collection of laser-separated prints, postcards and calendars featuring underwater scenes, has sold its interests to Underwater Impact, Inc. Underwater Impact is a division of Impact Florida, Inc. and has considerable experience in marketing laser prints and calendars of topside images. In addition, new underwater images are being produced and the 1985 calendar is already at the printer with final delivery projected for August.

For further information, please contact Myrron Martinez, Underwater Impact, Longdale Industrial Park, 713 Industry Road, Longwood, FL 32750.

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DOCTORS WHO WORK IN THE SEA

BY HILLARY HAUSER

One morning in June of 1983 Dr. Paul Linaweaver was interviewing a patient in his office at the Santa Barbara Medical Foundation Clinic when his phone rang. The caller said there had been an accident at sea, that two divers had been badly burned by a flash fire inside a decompression chamber. One of the divers was just up from a deep dive and still needed decompression. Some 25 minutes later, with a doctor's bag of medical supplies under his arm, Linaweaver was aboard a helicopter heading for an offshore oil platform where the boat with the divers had tied. With him was Dr. David Buchanan, a plastic surgeon who would treat the diver who did not need decompression.

Fifteen minutes after the helicopter landed on the platform, Linaweaver crawled inside the double lock chamber, and once inside, began to treat the diver for the most immediate problems of burns and breathing difficulties. Then, he set about the business of working up a

schedule of decompression to bring the diver slowly to surface pressure so he could be brought out of the chamber and transported to a hospital on shore.

The fire had caused a crucial delay in the diver's decompression and no tables in use for such dives could tell Linaweaver what the correct procedure would be. He had to work it out for himself.

So, while Dr. Buchanan completed his preliminary treatment of the diver outside and arranged for the airlift back to Santa Barbara, Linaweaver settled in with his patient for the long haul back to daylight. It took three and one-half hours.

Linaweaver has been an U/W medical doctor for 30 years, doing this along with his practice in occupational medicine. In 1983 he was voted president-elect of the Undersea Medical Society.

Working with Linaweaver at the Santa Barbara Medical Foundation Clinic is Dr. Hugh Greer, a neurologist, who is also an undersea medical doctor. The two of them handle diving emergencies

throughout the Southwest. Anyone in California, Arizona, New Mexico, Nevada or Utah can call, toll free (919) 684-8111, and they'll reach Linaweaver or Greer.

Because of the two physicians, the Santa Barbara clinic has become one of four major diving accident centers in the country. (The others are at Duke University, Durham, North Carolina; Souellen-Smith Hospital in New Orleans; and at UC San Diego.)

Linaweaver and Greer said that most of the accidents they handle are sport diving related. "There are two things," said Greer. "Either novices get into trouble with air embolisms (caused by ascending too rapidly), or experienced divers overstay their time (resulting in bends)."

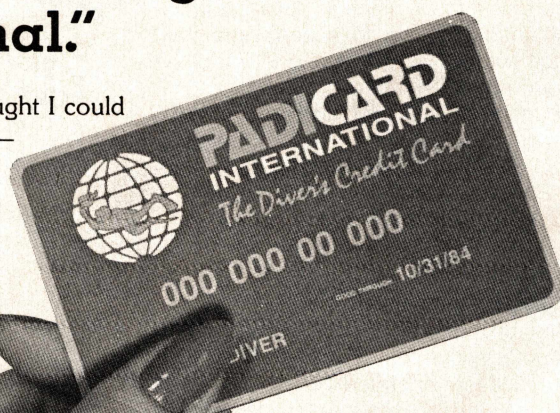
Commercial diving accidents, such as the flash fire in the chamber, become complicated with complex decompression schedules and the different gas mixtures breathed by the divers. It all has to do with the rate of absorption of gases in the body tissues, the two explained. Nitrogen, a major component of air, increases in partial pressure as a diver descends—resulting in the condition called nitrogen narcosis, which can become apparent to a diver at about 60 feet. It will cause significant problems beyond that depth and unconsciousness can occur at 400 feet, said Linaweaver. Therefore, commercial divers often breathe a helium-oxygen mix, called heliox, at depth.

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Whether a diver breathes an air mix containing helium or nitrogen, his decompression can be speeded up by oxygen, which, in a chamber, is administered to divers by a mask. The masks are used so that the atmosphere of the chamber does not become filled with oxygen—which will burn if there is a spark to ignite it.

Linaweaver said that the diver in the flash fire accident could not use the oxygen mask, because of the extent of his burns, and that he therefore had to decompress with air. This, he explained, is a much longer procedure.

The diver had been making a 250 foot dive breathing heliox, and Linaweaver explained that a 40 minute dive at that depth requires a total decompression time of 155 minutes. Done normally, the diver would stand on an underwater platform for a series of stops—the first at 110 feet for 7 minutes, the second at 90 feet for 5 minutes, then 80 feet for 8, 70 feet for 9, 60 feet for 14 and 50 feet for 12. At 40 feet, the heliox diver must stay for 96 minutes and then come to the surface (whereas a diver on air must continue to decompress at 30, 20 and 10 feet).

Because the last stop at 40 feet is such a long one, the diver usually comes to the surface at this point and is put into a decompression chamber, which is pressurized back down to 40 feet. The diver can then wait it out while remaining dry.

However, when a diver surfaces to go

into a chamber, he has to move fast, because he has only four minutes to get back down to 40 feet. A double lock chamber is used, with two compartments separated by a thick door, sealed to withstand pressure from either side. The inner compartment is prepared for the diver, usually to 60 feet, said Linaweaver, while the outer compartment remains at surface pressure so a diver and his tender can enter from the outside.

The diver and tender will go into the outside compartment and the tender



Dr. Linaweaver (left) and Dr. Greer.

helps the diver remove his gear while the compartment they are in is "blown down" to match the pressure in the inner compartment.

Linaweaver said that the door separating the two compartments cannot be opened unless the pressures are the

same. He added that a bleed-off valve is usually opened between the compartments to speed the process and that by the time the diver enters the inner chamber both compartments are at 40 feet.

The tender, in the outer compartment, is then brought back up to surface pressure. Since the "dry dive" has been quick for him, he requires no decompression. At this time outside personnel or supplies can be brought in, if the diver decompressing requires them.

It was in the outer chamber that the flash fire occurred. The compartment was reopened in a matter of moments, the tender was taken out and a new tender went in with the diver and the "blow-down" process was repeated.

When Linaweaver arrived, he entered the outer chamber and was taken down to 40 feet where he replaced the tender inside. Once he had administered the immediate first aid, he then figured out a decompression schedule, based on the fact that 18 minutes had elapsed for the diver on the surface instead of the usual four.

"I had one chance to do it right," said Linaweaver. "There is no book to get it out of. It was like being between a rock and a hard spot."

His calculations worked out well, and after three and one-half hours the diver and Linaweaver came out of the chamber without incident. The diver was then flown to the burn center in Sherman Oaks.

photo/Ray Borges

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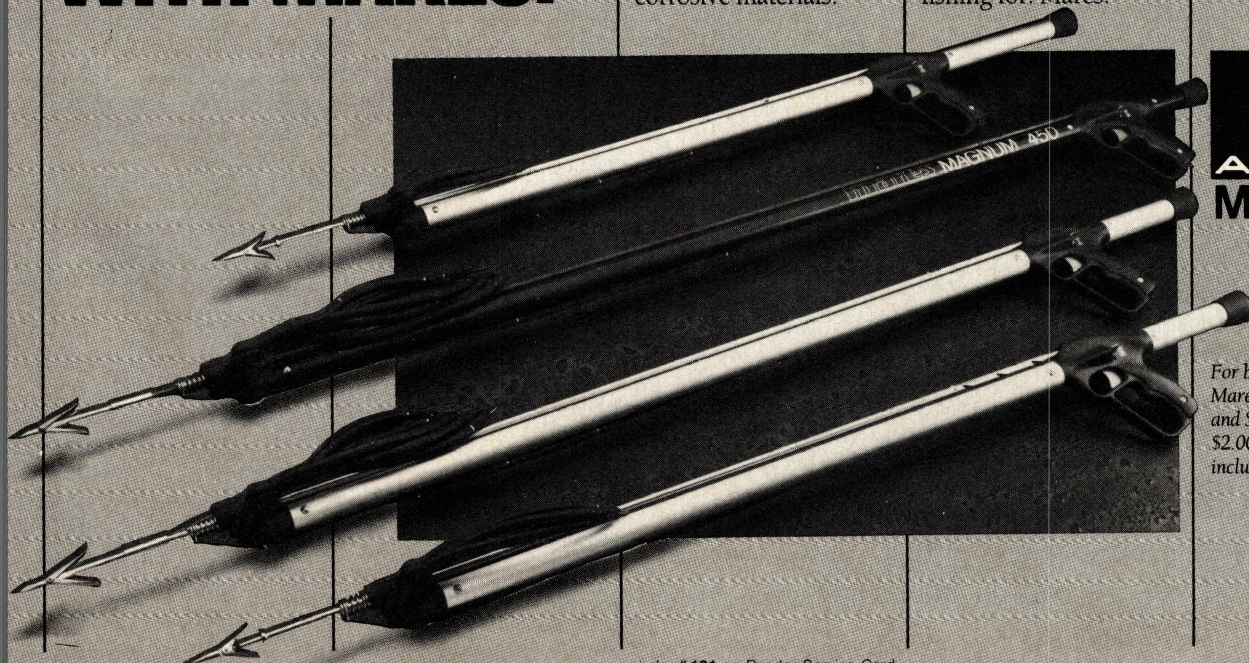
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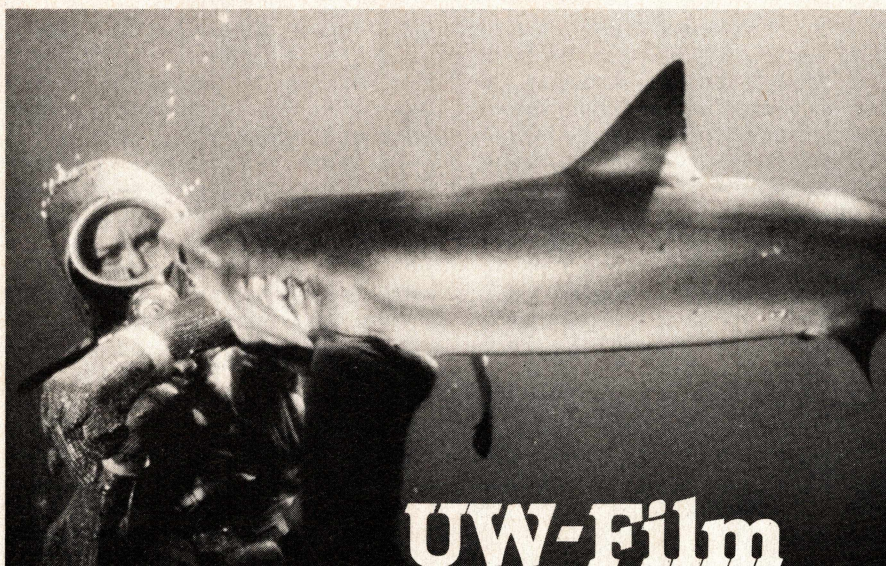
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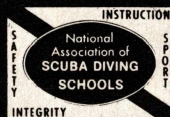
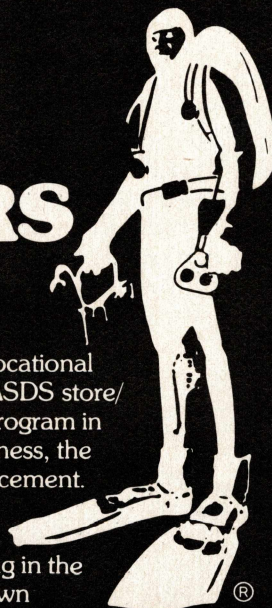
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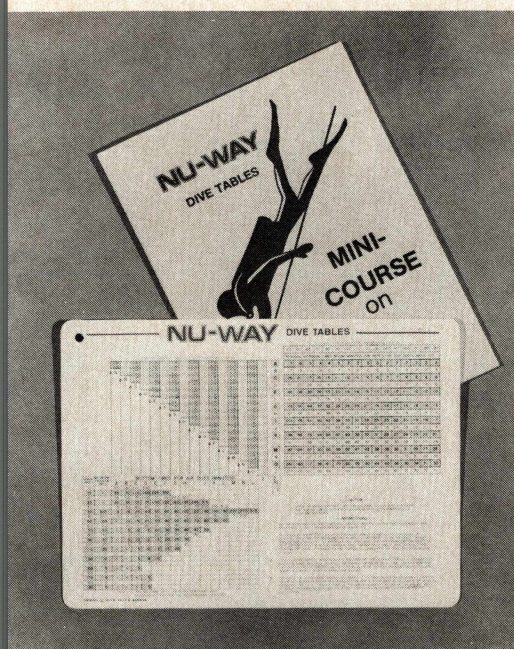
BY JIM WALKER

Beginning divers are taught the basics of repetitive dive calculation utilizing (usually) one form or another of the U.S. Navy dive tables. While this is an extremely important aspect of sport diving it is only one (and often the most tedious) part of the training. Beginning divers may pass this part of the course without becoming truly proficient at it. Even a diver fully competent in these calculations can easily become rusty with lack of practice.

The March 1982 issue of SKIN DIVER featured an article on the Nu-Way (Orange-Aid) Repetitive Dive Tables. Developed by Ralph Maruscak, these contain the information found in the U.S. Navy tables, rearranged and color coded to simplify calculation. Now, Maruscak has gone a step further and created the Nu-Way Mini-Course on Repetitive Dive Tables. Featuring the Nu-Way tables on a six by eight inch, waterproof, plastic card, the kit includes an explanation booklet and a resealable plastic bag. The kit is designed to simplify the subject of repetitive dive calculation for the beginner, to serve as a quick refresher for the out of practice diver, and to be a handy, take-along reference for all divers.

For an explanation of the Nu-Way tables, refer to the '82 story, but in summary they are extremely easy to use, topside or underwater. They carry the Navy Standard Air Decompression Tables on the back. The step-by-step instructions stand on their own, without the Mini-Course booklet.

However, for the out of practice diver or beginner, the Mini-Course is an invaluable guide. According to Maruscak, the purpose of the text is to present some basic facts about repetitive diving and to offer a number of repetitive dive calculation examples using the Nu-Way Dive Tables.



The 23 page Mini-Course booklet is just slightly smaller than the tables themselves. Beginning with a definition of a repetitive dive (any dive made within a 12 hour period of a previous dive) it goes on to clearly explain what residual nitrogen is and what it means to repetitive dive calculation. The guide briefly, yet clearly defines (with examples), what is meant by depth of previous dive, length of previous dive, time interval between dives and depth of repetitive dive.

Beginning with a simple, one dive problem, the guide continues with examples of two and three dive no decompression problems, includes an example of how to work backward in the tables to pick an appropriate surface interval and concludes with an example of a decompression dive. An appendix includes three examples of dives which illustrate exceptions to rules or variances which may occur in multiple dive situations.

For each example problem a large, color coded reproduction of the Nu-Way tables is shown, marked clearly with the dive profile. The user can follow the problem on the waterproof tables and then quickly check it against the reproduction.

The Mini-Course is truly a gem. While it certainly isn't a substitute for proper dive training, it practically self-teaches the subject of repetitive dive calculation. The pages are uncluttered and all information is presented in easy to understand terms, backed by illustration.

The Mini-Course on Repetitive Dive Tables and the Nu-Way Dive Tables are sold at dive stores and are available directly from Nu-Way (\$11.50 for both, including postage and handling). Contact Nu-Way Dive Tables, P.O. Box 1413, Pittsburg, PA 15230

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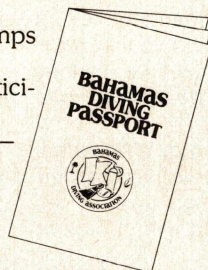
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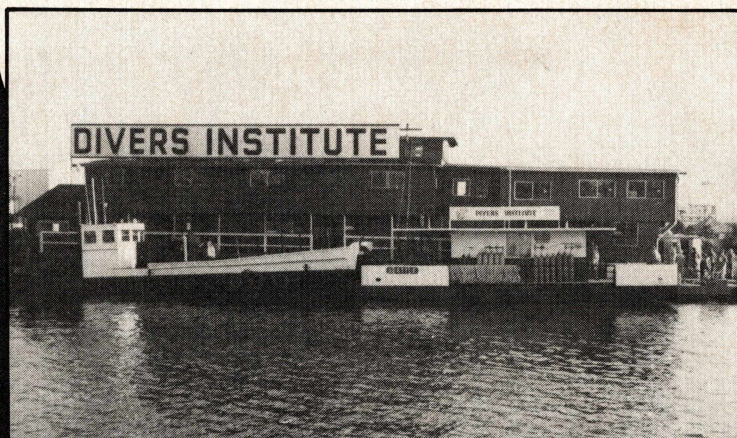
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In the four decades since the beginning of World War II there has been an industrial revolution that made this era the most exciting in the history of science and technology. The astonishing advances in engineering, physics and the understanding of the physiology of man, particularly in the past two decades, have created the elements that make possible the field of modern diving. And, it is equally as obvious that scientific disciplines of diving are moving rapidly into a future that is clearly going to be dominated by even more sophisticated equipment and work techniques. It is in the scientifically advanced diver training that Divers Institute of Technology has played such an important part. This is evidenced by the success of its graduates in the competitive global

arena of underwater work.

Who are the hundreds of men and women (DIT has graduated several women students) who elected to enroll in this grueling training program and plan to work in the extremely demanding field of commercial diving? Why would they want to lead a life of a transient worker as they follow diving jobs that develop in one world port after another?

Les Cagle of Port Orchard, WA, stated, "I liked the idea of becoming a commercial diver for the challenge and for the money. Also, I was bored with a nine to five job."

Bryan Hersch, Marysville, WA, had a similar reason. "I enjoyed scuba diving and I knew I didn't want to work in a factory or behind a desk so I decided to become a commercial diver."

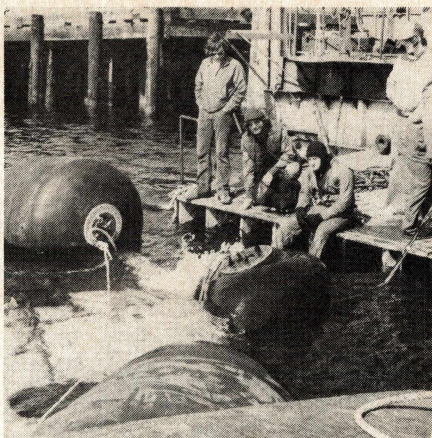
Besides the money and the challenges offered, the probability of traveling from job to job appeals to some. For Gene

Shock, Defiance, OH, that was one of the reasons for becoming a diver: "to avoid a nine to five factory job, for a challenge and to have a job which would allow me to travel."

Student classes convene every five weeks and a visit to the Institute finds five or six elements of training in progress simultaneously. The average student at DIT is about 24 years old and has completed just over 13 years of formal schooling. John Manlove, president of DIT and a retired Navy diver, pointed out that the school's admission requirements state that a student applicant must be at least 18 or, if younger, have parental consent to attend DIT. Regular students must possess a high school certificate or demonstrate an ability to benefit from the training offered by DIT. A thorough evaluation of the work experience of candidates in lieu of a high school diploma is used to determine the student's aptitude for underwater work. To become successful, DIT students must have a high mechanical aptitude and be able to work well with their hands.

In a 1982 survey of 394 students who graduated between May 2, 1980 through May 7, 1982, 299 responded to the questionnaire. Of these, 277 were available for the diving field work force and of that number 83 percent (231) were working as tender/divers and 3 percent were employed in a closely related field.

A commercial diver is usually a person who can adjust to great psychological contrasts. The profile of an average diver is one of an individual who likes to work alone at a challenging task and who is easily bored doing routine things. Yet these same individuals often find themselves in steel pressure chambers for periods of days during long saturation/decompression dives with several other underwater workers. To succeed under the broad spectrum of a diving life, and in the variable environments of an underwater existence, divers must first and most importantly, have phlegmatic temperaments that leave them unresponsive to things or conditions that might arouse



Float bags are used on many diving jobs.

antisocial emotions in other persons. They must also be persevering but without becoming dangerously persistent in a cause that should be aborted for the sake of safety.

According to Charles F. Litzo, vice president, business manager and recruitment/enrollment adviser, the Divers Institute of Technology offers only one training program; a six month professional diving course comprised of 780 hours of training. The educational objectives of the school are to train students in all phases of commercial diving with special emphasis on diving safety and to prepare students for gainful employment in the commercial diving industry.

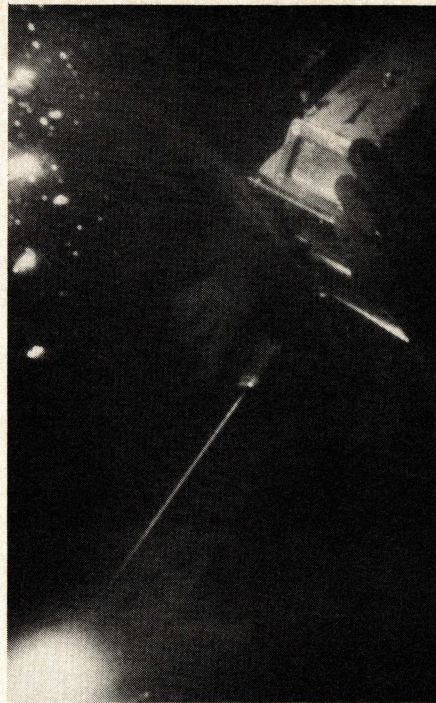
During an in-depth tour of DIT facilities with John Ritter, secretary-treasurer and chief instructor at DIT, he explained the arrangement of classes and chronology of subject matter. In accomplishing the stated objectives of the course the students spend about half their time on classroom work.

Al Brown from Wisconsin stated, "After graduation I want to explore the possibilities in offshore work and, as soon as possible, have my own diving business." Brown, and other graduates who will eventually run their own businesses, will find the classroom work invaluable.

Ritter further explained, "The 12 weeks of classroom work is interspersed with 14 weeks of practical, hands-on training in several types of diving gear and with the latest available power tools and technologically advanced methods of accomplishing underwater tasks." He was watching a student practicing underwater welding when he added, "This combination of classroom/practical training prepares the student for entering the commercial diving field with confidence and a professionalism equal to the demands of high technology diving."

The six month course is demanding both physically and mentally. In addition to the classroom studies, students work with topside equipment such as compressors, welders, pumps and in rigging heavy tools; learn to become tenders to

A DIT student practices metal cutting.



fellow students; to become telephone talkers and to schedule decompression profiles; and to perform welding, work with tools at various depths, and to work on jobs that require cooperation between divers while underwater.

Their first underwater student training will probably be in Navy Mark V helmet gear, a bulky but practical full length, completely closed rubberized canvas suit topped with a spun-copper helmet and ending with lead soled boots to provide negative buoyancy. From this traditional equipment, still best suited for many fields of commercial diving, the students move into training with the latest high technology diving helmets and full facemasks made of high impact plastic, with demand regulators and communication systems built into the helmets.

Students rate DIT training high. In reply to a question about what part of the training most benefitted students, Jack T. Kerr of Montana told me, "I thought the course was well organized and all of the hands-on experience with the wide variety of diving gear, tools and equipment gives a person confidence that he can handle himself in the diving field. The deep dives are of great value to the students."

When deep diving training was discussed, Ritter stated, "I believe DIT is the only diving school that provides students with the opportunity to make working dives to 200 feet." Training is scheduled so the 200 foot dives culminate a two week period of open water diving training. All the dives except these are made with compressed air diving equipment. The 200 foot dives are made with a Heliox diving outfit: A mixture of helium and oxygen is supplied from a special mixed



The latest diving gear is used at DIT.

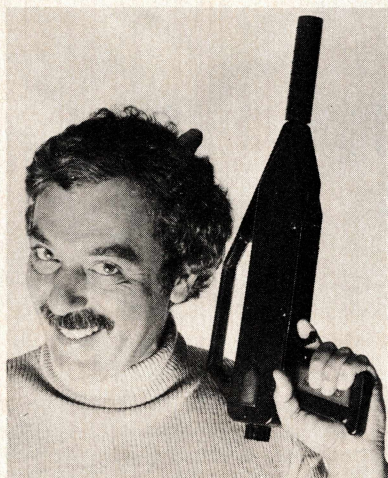
gas rack. On the deep dive barge, in addition to the actual dive station from which the diver enters the water and descends to the bottom, there are 11 other work stations for the deep, mixed gas dive team to man. These range from the mixed gas rack operators to telephone talkers to diver tenders. All students are trained and practice at the many stations until they can work as a competent team to put a student diver on the muddy bottom of Lake Washington, keep him/her there until the job is completed and finally get him/her safely back on board the deep dive barge. Learning to use mixed gas diving gear is an important qualification for a graduate who expects to work in saturation diving or in the offshore oil fields. By far the largest group of industrial employers of saturation divers are these companies.

When asked about his training at DIT, Randy Gray, Eugene, OR, stated, "Mixed gas is really the heart of the course along with the deep dives. The hands-on use of all equipment gives a real feel and ability to use it under adverse conditions such as we have here; cold water and low visibility. You couldn't ask for a better training ground for commercial diving." Gray plans on exploring the possibilities of working in the offshore oil fields.

Many of the dozen or so commercial diving schools in the United States specialize in training their students for work in the offshore oil industry. At DIT students receive training in all aspects of commercial diving and oil field work is not overemphasized. However, many DIT students have ambitions of becoming oil patch divers.

Mark De Priest from Washington, stated, "The adventure and possible riches life appeals to me. The ability to work around the world once I gain experience would be a dream come true."

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HI-TECH DIVER

"I want to start in commercial oil field diving for experience," Michael Shea said. "Eventually, though, I want to start my own salvage company."

Part of student plans for offshore oil work stems from the success of former DIT graduates. "It's been three years since I graduated from DIT and came to the Gulf of Mexico to build a career in diving," wrote Jay E. Weigel of New Orleans. "The training I received made me well prepared to advance through the steps of tender, diver/tender and finally diver. I also spent one year as a life support technician on saturation systems and over a year as a mixed gas operator for surface supplied gas dives."

Working in the offshore oil industry might not be exactly what some of the students dream it is. There are several phases of extremely expensive effort for an oil company to bring a barrel of oil from deep under the ocean to a refinery and ultimately to the gasoline pump. The first phase is seismic exploration to try to determine if there is oil beneath the sea bottom. This exploration sometimes uses the services of specialty research divers, usually marine geologist divers, but is mostly done with electronic instruments.

Once an area is located that is believed to contain hydrocarbon products in commercial quantities (oil or gas), leases are obtained for those underwater tracts. Then drill rigs are brought to the site. These may be a submersible (only a few of this type remain in service), a jack-up, a semisubmersible or a drill ship. These units were developed in approximately that order starting in 1949 with the first submersible and in 1953 with the first jack-up rig. Several drilling technologies are employed, some of which are designed to require services of divers at various stages of the work. Others are considered diverless, but even these sometimes need the capable hands of a well trained diver. If hydrocarbon products are not found, the well is probably cemented in, capped, all equipment removed and the well abandoned. If oil or gas is found, the well is tested and capped and the drill rig moved off the subsea structure and, eventually, a production platform brought on the scene. Most production systems do require diver assistance. Also, there may be several wells drilled by one rig in a particular location and serviced from one manifold.

Once oil is found it must be transported from the well to a refinery. In the past most oil was "shipped" via pipelines running along the ocean bottom to shore and ultimately to a refinery. As exploration and drilling went deeper and farther from shore other methods of transportation

(Continued on Page 48)

GT-45 capacity; 6 adults, up to 45 hp engine



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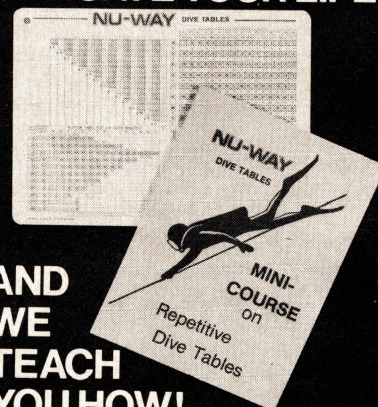
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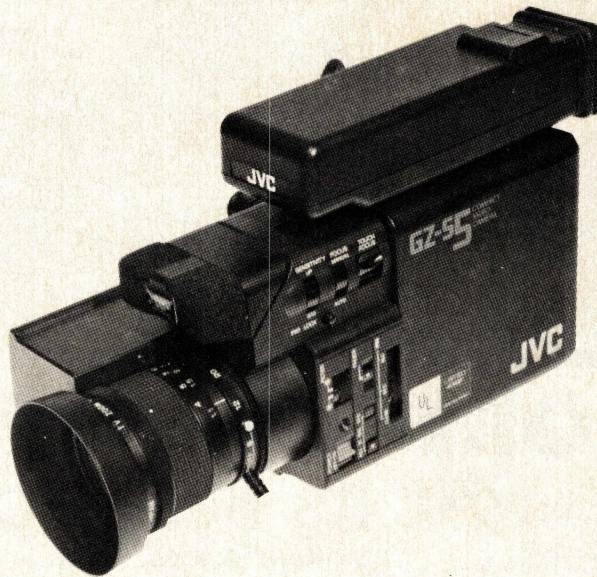
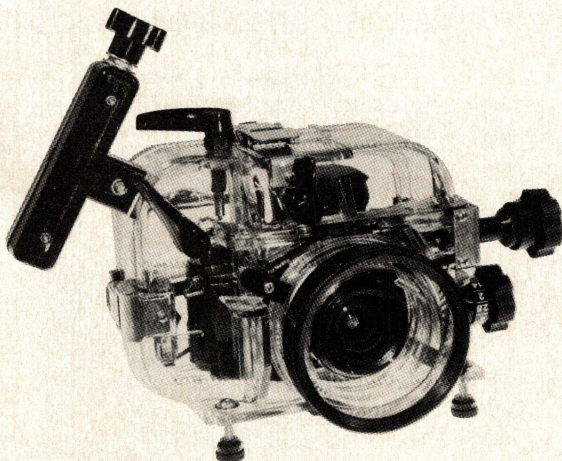
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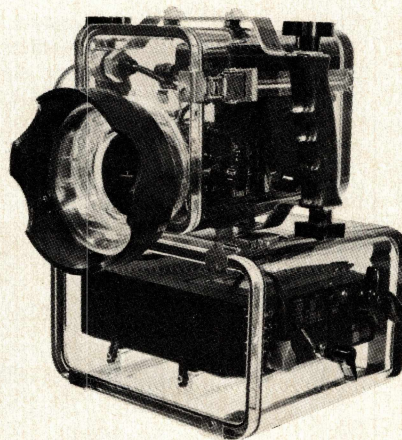
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The accessories available for this system make it the number one choice for divers everywhere. The 3 inch JVC TM-P3 Color Monitor is powered by either AC or DC, and is ideal for the travelling diver.

The Ikelite Marine Video System gives you complete visual access to your camera and recorder. And is the only system that isolates the camera from the recorder to provide more complete water-proof integrity than that of a one-piece housing system. The two housings separate easily to provide added convenience in transportation.

The Ikelite Marine Video System and the JVC Compact Video System - both are lightweights when it comes to cost, but are real heavyweights when it comes to performance.




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OREGON DIVING

At Its Best Now

BY KARL D. ANDERSON

With a reputation as one of the most scenic of our coastal regions, Oregon is also known for its rough seas and wave-battered strands. Although diving may be somewhat seasonal and limited to specific areas at times, the underwater experience is not without its rewards.

The most favorable months for diving Oregon's coast are July, August and September, when storms are much less frequent and water temperature is around 55°F. In the winter, temperatures drop to between 45 and 50°F, although improved visibility during calm periods may

be a compensating factor.

Underwater visibility is less during rough seas or just after a rainy period (owing to runoff). Sometimes it is 20-30 feet while at others it is five feet or less.

Tidal currents are much more severe in many areas along this coast, making tide tables an essential part of a diver's plan.

The variety of marine life includes some of the most unique and beautiful animals a diver will ever encounter. The Northwest is home to the giant Pacific octopus, which may weigh in excess of 100 pounds and have an arm spread of four to six meters. Despite its size, this creature is rather shy and presents no danger to divers. It is however, one of the best subjects to capture with your camera!

Another animal found only in the colder waters of our undersea world is the wolf eel. With an average length of four to five feet and a curiosity which far surpasses that of its warmer water cousin, the moray, the wolf eel quickly becomes accustomed to a diver's presence, and will accept handheld culinary offerings in virtually no time at all. Its primary diet consists of crabs and urchins, which are crushed in a tough, leathery mouth!

Brilliantly colored anemones and nudibranchs offer the underwater photographer endless opportunities, even in limited visibility. Most areas are literally blanketed with soft and hard invertebrates.

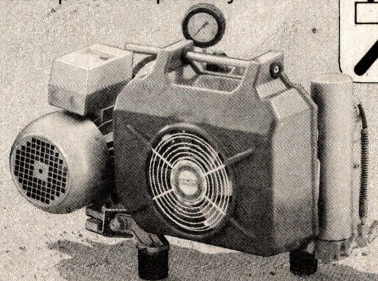
For the divers wanting to spearfish or



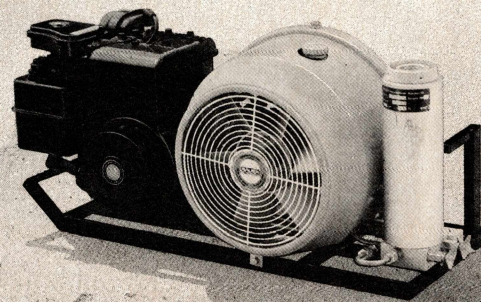
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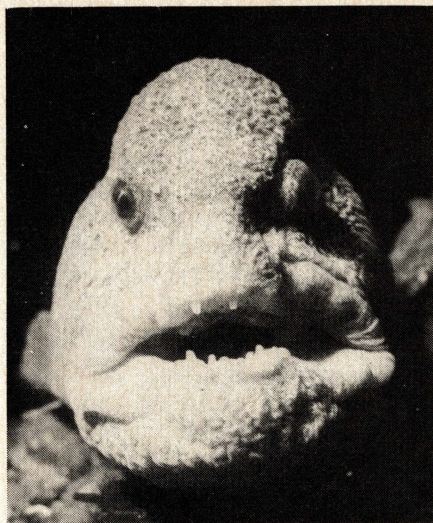
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take other game, the Oregon coast has to be high on the list. Halibut, lingcod and countless varieties of rockfish are in abundance. Because these waters have seen minimal diving activity in the past, the fish are greater in size as well. Many varieties of clams are also plentiful, including the geoduck (pronounced gooey duck) and the blue clam. Oregon has no lobster; the waters are too cold for the Pacific species found off California. But, their tasty equivalent, the Dungeness crab, can provide a heavenly feast after a day of diving. Crab feeds, as they are called by native Oregonians, are very popular in all areas along the coast.

In addition to its many opportunities for the underwater photographer and the hunter, the waters off Oregon hold claim to a multitude of shipwrecks. Many an experienced skipper was no match to the fury and merciless antics of immense storms at sea. Crafts of all sizes were cast to the deep in open water, while others met their fate on the rocks and shallow reefs of the Oregon coastline. Although many of these have been located and recorded, there are a few, dating back to the 17th century, which remain undiscovered.

A notorious bounty from one such galleon, the Neahkahnie treasure, has lured many a hunter from all walks of life. Although millions of dollars, and in some cases, peoples' entire lives, have been



photos/Walt Amidon

spent in search of what the Spanish buccaneers left behind, no one has ever found an ounce of treasure. Mysterious stones with manmade markings are believed to hold clues to the whereabouts of the treasure, but the puzzle remains unsolved. Today these marker stones can be seen in Tillamook's Pioneer Museum.

Another galleon, dating 1679, went down off the coast between Tillamook and Nehalem. In her hold she carried gold and beeswax, a precious commodity of her day. The beeswax was individually inscribed with the company's name

and the year. Following violent storms off the coast in this area, huge chunks of the beeswax are still washing ashore, which suggests that the galleon's structure is still somewhat intact, but where? Specimens of the beeswax can also be seen in the Tillamook museum: The undiscovered wreck has been appropriately named The Beeswax Ship.

For the diver in search of relics, bays and inlets along the coast offer protected areas where bottles, portholes and other maritime related goods may be salvaged.

Many coastal rivers which drain into the Pacific offer still another form of diving. The Trask, Kilchis, Wilson, Umpqua and Nestucca rivers, to name a few, offer fantastic visibility during summer months and are filled with salmon making their way upstream to spawn in the winter. Viewing these 30-50 pound fish from below the surface is an experience in itself!

Deep Sea John's in Newport and Garibaldi Aqua Sports in Garibaldi, just north of Tillamook, are the only dive shops with air stations on the Oregon coast. Others are farther inland, in Corvallis, Salem, Eugene and Portland. When you plan a trip to Oregon, keep this in mind!

As far as specific diving locations are concerned, Pt. Orford, approximately 50 miles south of Coos Bay, is one of the best. A small, sheltered cove offers easy access to some of the clearest waters off

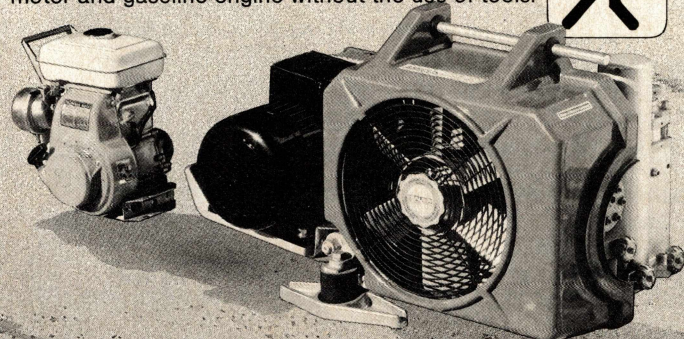
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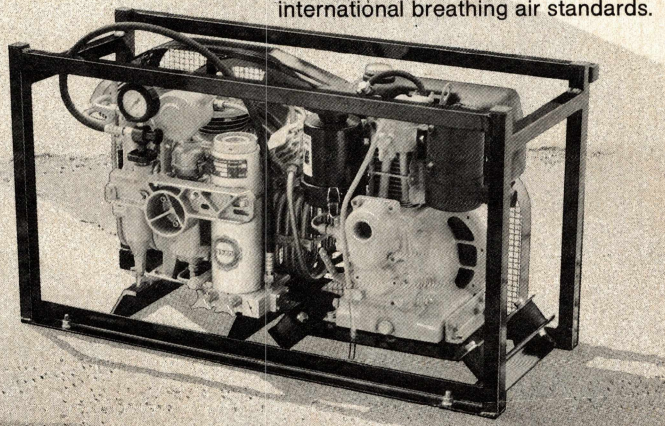
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HI-TECH DIVER

(Continued from Page 44)

were developed. There are several development platforms now in use where a large tanker is permanently moored above the oil wells in a particular field. Crude oil is brought to the surface and into the production tanker and, as demand indicates, is transferred to a mobile tanker for shipment to a refinery.

Most underwater pipelines are now installed with pipe lay barges and divers are frequently employed in this work. Each lay barge keeps a minimum of two complete diver/tender crews on board. Lay barges frequently work 24 hours a day so divers must be available on a 24 hour basis.

In today's offshore oil industry the brightest area of diver employment is in the inspection and maintenance of the thousands of oil related structures throughout the world. Most of these have been in service for 10 to 20 years and are in need of constant inspection, servicing and repairs. Much of this work is best done by divers although there is a trend toward using various types of work vehicles, mostly in a diver-assist mode.

Some of the work a diver might get involved with would include, but certainly not be limited to, underwater inspection of various components of the systems; bolting up flanges or other parts; welding metals and cutting with arc-oxygen systems. Also, a diver must expect to use every conceivable type of topside tool adapted to underwater use. Pneumatic, and in more recent years, hydraulically operated tools are frequently required to accomplish a given task. DIT students routinely work with the many kinds of tools found on offshore jobs.

Underwater rigging of wire rope and chain slings, come-alongs of various types, and block-and-tackle are sometimes required to make a job "go."

An educational institution is only as good as the instructors who teach and integrate the various disciplines making up the total course. Eight of the 11 DIT staff members are ex-Navy men; seven of whom had extensive Navy diving training and experience including mixed gas, saturation, ship repair and salvage, underwater demolition and various experimental diving duties. Some of these same instructors have developed additional valuable expertise as commercial divers working for organizations such as Taylor Diving and Salvage Company, Treasure Salvors, Inc., Santa Fe Diving and Construction Company, McDermott, and Martech Diving. The greatly varied work activities of the instructors have resulted in the universalized training program at DIT.

Staff members also attend seminars

(Continued on Page 100)

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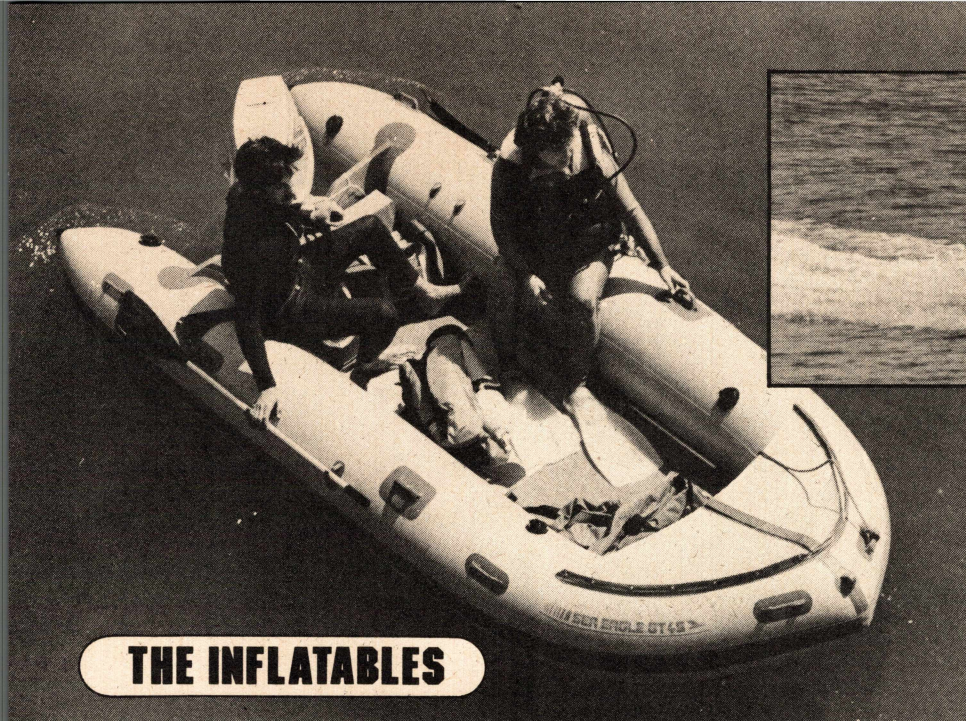
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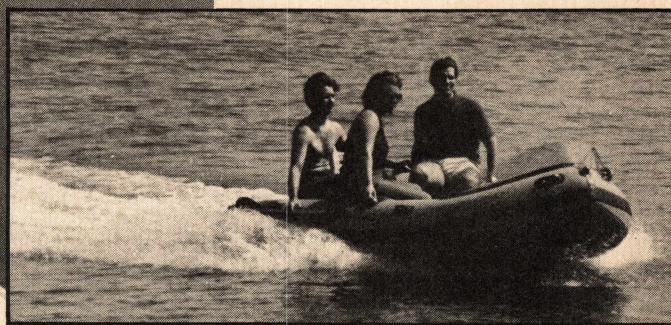


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THE INFLATABLES



SEA EAGLE GT-45

**American Explorer Speedboat
Capable of Long, Open Seas Forays**

**TEXT AND PHOTOGRAPHY
BY ERIC HANAUER**

Assigned to test the Sea Eagle GT-45, I didn't expect much. All I knew about the company was that they made lightweight, unsupported PVC boats. Everyone knows that a diving inflatable must be made from fabric-based material to handle the stress of a high speed engine and the weight of people and equipment. Imagine my surprise when I saw the boat itself. It looked good and was made like a real dive boat. When we took it for a ride we found it handled like a real dive boat, too.

A new product with a familiar shape, the Sea Eagle GT-45 is made by Hutchinson of France, an inflatable boat manufacturer for more than 30 years. Their boats have developed a well earned reputation for quality and excellent handling. Since this one is based on Hutchinson's design, it displays the same characteristics.

Sea Eagle is one of the few American companies in the inflatable boat field. For the past 13 years they have concentrated their efforts on lightweight dinghies and tenders, limited to engines of six horsepower or less. They also made a highly respected line of inflatable canoes, capable of white water navigation. All boats were made in Italy to Sea Eagle specifications, of PVC material without a fabric base. They performed their functions well, but lacked the rigidity and strength to accept big engines and the kind of abuse divers dish out. In an effort to expand into new areas, the company contracted with Hutchinson to build three sportboats, designated the Explorer Speedboat series. At 13 feet, 10 inches, the GT-45 is the flagship of the fleet. The model designation indicates it will accept an engine up to 45 horsepower.

Sea Eagle's approach is to offer boats built in Europe to their specifications, with

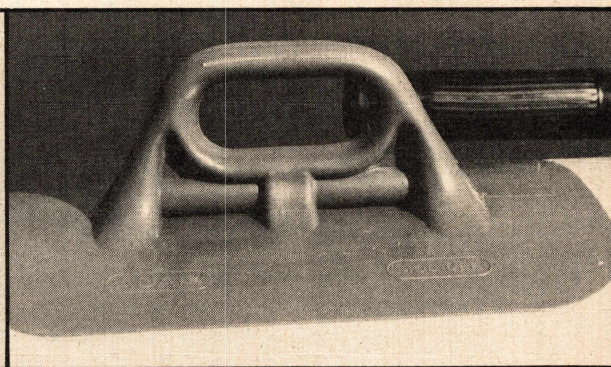
features and styling for the American market. While many accessories are made in the United States, their basic philosophy is to buy products and accessories where the quality and value are best. The GT-45 illustrates this approach with the hull made in France, the fittings in Italy and the floorboards and keel in the United States.

The hull is essentially a Hutchinson. Made of 840 denier nylon with a heavy PVC coating outside and rubber inside, it is extremely rugged and resistant to oil, ultraviolet radiation and abrasion. All seams are vulcanized, then tape is glued

wave instead of going through. This combines an advantage of an inflatable keel with that of a rigid one.

With the exception of the transom, all wooden parts are made in the United States. The difference in manufacturing techniques is evident upon close examination. The transom is made of 24 plies while the keel has only 10, although it is the same thickness. More plies mean greater strength. That is more important in the transom, however, because it bears most of the engine thrust. The wooden floorboards are rather thin, but are supported by the keel and the alumi-

The valves on the Sea Eagle are made entirely of plastic and rubber to resist corrosion. They are sealed by a plastic cover with an O-ring. The oarlocks are also plastic.



over them. The floor material is 1000 denier polyester fabric, also with PVC coating. Polyester doesn't stretch like nylon does, so the bottom won't distort when running at high speed. This is especially important in a boat with a rigid keel. Bottom distortion would increase drag, resulting in greater power demand.

Sea Eagle keels are made in three sections. The front section pivots, allowing the boat to plow up over a really steep

num stringers. They connect by means of aluminum H-bars which slip on and off the boards. An owner will probably want to attach them permanently by pounding them on with a ball peen hammer. Wooden floorboards and diving gear don't mix too well and the prudent owner will purchase a floor covering.

In keeping with Hutchinson practice, the four separate air compartments have longitudinal seams. Baffles separating

(Continued on Page 106)

MARK X

SDM SPECIAL SERIES ON REGULATORS



SDM evaluated the Scubapro Mark X first stage and Adjustable Second Stage, connected by a large diameter, Super Flow hose. The combination proved to be easy breathing and dry.

SCUBAPRO MARK X

TEXT AND PHOTOGRAPHY BY GEORGE COZENS

The Mark X is the most recent addition to Scubapro's popular line of first stages. This line, starting with the Mark III conventional piston first stage, dates back to the early 1960s, and represents more than 20 years of refinements, testing and field experience under the most varied conditions. In 1965, Scubapro introduced its air balanced first stage and this led to the widely accepted balanced piston series of first stages, including the Mk V, Mk VII, Mk IX, and now the Mk X.

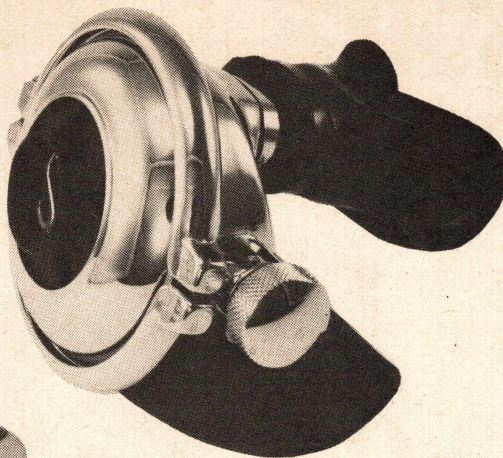
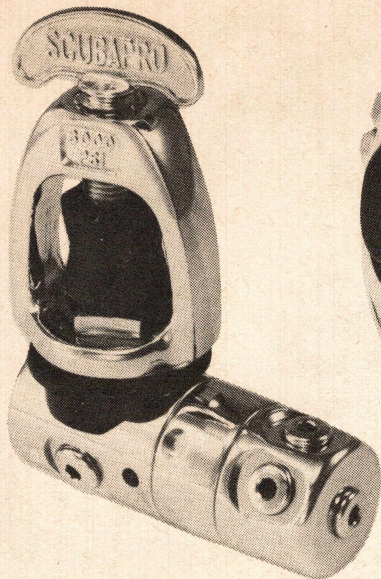
The Mk V, the cornerstone of this se-

ries, is probably the most copied first stage in diving equipment. If imitation is a sure sign of success, then the Mk V has certainly been a huge success. The Mk VII, reviewed by SKIN DIVER Magazine in February 1984, combined the basic internal design of the Mk V with a vibrating low-air warning mechanism called a Sonic Alarm. The Mk IX, evaluated in June 1983, represented some significant changes in the Mk V design— changes which Scubapro modestly indicated were "the first step in down sizing the bal-

anced flow-through piston design." This year Scubapro unveiled the Mk X, with the comment that this stage represented "the second step in down sizing the balanced flow through piston design...."

Sorry, but "down sizing" just doesn't adequately describe the developments leading to the Mk IX and Mk X first stages. The second step in down sizing (i.e., going from the Mk IX to the Mk X) was actually a slight enlargement: The stationary low pressure cap, to which the low pressure hoses attach on the Mk IX, was replaced by a swivel cap on the Mk X. This resulted in reduced hose strain on the Mk X, but with a minor lengthening in the stage, three more ounces in the weight and a minuscule increase in the cost (by about \$6).

The only difference, then, between these two stages is this rotating low pressure cap. Their internal design, and even their performance are identical. That's splendid, because the first step in Scubapro's down sizing of the balanced piston first stage was a significant one. This step involved engineering changes to the legendary Mk V first stage, resulting in even better, higher performance Mk IX and X first stages. And, that's quite an accomplishment, since, if you will recall, the Mk V was proven to be one of the very high performers in the 1979 U.S. Navy Experimental Diving Unit test of scuba regulators. These engineering changes centered primarily around the critical parts of the stage: the piston and spring. A redesign of the first stage body allowed all the moving parts (the piston and spring) to be tucked completely into the main body, instead of half in the body and half in the threaded, low pressure cap. If the piston moves within only one part, that part, and the alignment of the piston, can be made



The Mark X first stage (left) has two 7/16 inch diameter high pressure ports and five low pressure ports. The Adjustable Second Stage can be tuned externally.

much more precisely—precision which results in less wear on the piston O-rings and decreased friction and resistance to piston movement. Other advantages of this arrangement are a stronger, lighter, smaller and more reliable first stage, which requires less maintenance. A more compact body led to a reduction in the size of the piston. In fact, the stainless steel piston was reduced in weight and size: It was redesigned to be more compatible with the spring. This improved matching of piston and spring provides better performance at lower supply pressures, since the piston can open further at lower pressures, for greater air flow and less inhalation resistance.

However, when the supply pressure is low, relatively minor obstructions in the air path can produce increases in the inhalation resistance. The sintered filter can be one source of such an obstruction. If this filter gets clogged from corrosion, the inhalation effort can increase noticeably. To overcome this potential problem, the Mk IX and Mk X have conically shaped filters which provide about three times the filtering area as flat sintered filters.

The success of these changes was apparent in Scubapro's own lab tests. When supplied with air at 2,000 psi pressure, the Mk IX and X delivered air at an intermediate pressure between 128 and 140 psi and with a flow of about 80 cubic feet per minute (scfm), while the Mk V, under the same conditions, delivered about 87 scfm. That's only about a ten percent difference. But when the supply pressure was dropped to 300 psi, the flow of the Mk IX and X decreased to just 73 scfm, while that of the Mk V decreased to about 48 scfm. Hence, at lower cylinder pressures, the Mk IX and Mk X first stages can provide about 150 per-

cent more flow, or approximately one and one-half times the air that the Mk V can. This is quite surprising when you recall that the Mk V is still one heck of a high performance first stage.

Other information on the Mk X includes: a body, swivel low pressure cap and swivel yoke of chrome plated brass; a stainless steel piston and spring; a solid Teflon high pressure valve seat; two large, 7/16 inch diameter high pressure ports, marked HP; five low pressure ports on the end cap; and SPEC, Scubapro's approach to providing environmental protection, where, at the owner's option, a silicone compound can be placed inside the ambient pressure/spring cavity in order to keep the elements out.

The newer, more efficient, higher performance Super Flow hose is now a standard feature on all Scubapro second stages. Using common low pressure fittings, this hose has a bigger internal diameter, giving one third greater air flow capacity than conventional hoses, and helping to convey the high performance of the Mk X to the second stage.

And, speaking about second stages: The regulator evaluated here was furnished with the popular Scubapro Adjustable Second Stage. This stage dates back to 1965 and over the last 19 years has had an enviable record of dependability and versatility. The Adjustable Second Stage operates on the principle of a conventional downstream demand valve. The case, clamping ring and demand valve body are made of chrome plated brass. The demand lever and valve spring are stainless steel. Neoprene rubber is used in the valve seat, mouthpiece, exhaust tee and diaphragm cover. And, the diaphragm and exhaust valve are molded of silicone rubber.

Nothing exotic yet. What makes this second stage unique is the diver-adjustable demand valve. Here the demand valve is housed in a tubular barrel, which spans the width of the second stage case. A spring inside this barrel applies a closing force on the demand valve seat. Although the demand lever opens and closes the valve, it has to work against the compression of the spring. This spring's compression, however, is adjustable by means of a knurled knob on the outside of the stage's case. By screwing the knob in or out, the spring compression, and, therefore, the inhalation resistance can be tuned during the dive. Such an adjustment can be set to prevent freeflowing when the regulator is not in use, or to reduce air surge when diving through surf or strong currents.

Routine care is no different than that suggested for any good regulator. Annual, professional service is required in order to keep the limited, lifetime warranty valid. The cost will be for labor, primarily, since all replacement parts are covered by the warranty (except the sintered filter and the mouthpiece and hose assembly after the first year).

During my evaluation dives the Scubapro Mk X with the Adjustable Second Stage performed surprisingly well. Diving with it was a real pleasure. Inhalation resistance was quite low for slight to normal inhalations, and increased only slightly for very large inhalations. Even at my deepest depth of 100 feet, I tried but couldn't out breathe it. Exhalation resistances were also quite low. In all the various orientations and at all depths encountered in the three dives, I found no idiosyncrasies nor abnormal behavior. And, in all positions the regulator was completely dry—no water leakage was noticed. Freeflowing, although not a problem during the dives, was observed whenever the mouthpiece was pointed upward with the stage full of air or with the purge depressed. No freeflowing occurred when the mouthpiece was positioned horizontally or down. These observations were with the demand valve adjusted for maximum performance. When the adjustment was set for minimum performance, no freeflowing occurred at all. Even when pointed up and the purge depressed, bubbling stopped quickly.

There should be no mistake about my conclusion. I have complete confidence in this regulator, based not only on my own evaluation, but on the experiences of several friends. It should also be extremely reliable in use and require only minimal maintenance. What more can I say? Test dive the Scubapro Mk X/Adjustable Second Stage. For \$280, I'm certain you'll be impressed, too.

Right: A diver framed by wreckage, using natural light, *Calif.*



Cooking utensils on the range in the galley, *Fujikawa Maru*.

Diver framed between cargo booms shows size, *Gosei Maru*.



WRECK

To many U/W photographers (especially Jim), there is no subject more thrilling than a shipwreck. Be it the history of the wreck, the urge to discover artifacts, the thrill of exploring darkened interiors, or the multitude of fish and close-up subjects that often live on and inside the wreckage, just the thought of such photography makes their hearts beat faster.

But regardless of how excited you are, good wreck photography (unless you're satisfied with snapshots) requires planning. Begin by asking the following questions: 1. How deep is the wreck, and what are the water conditions? 2. What condition is the wreck in and what are its strongest features for U/W photography? Are the hull and superstructure intact? Are there artifacts, abundant fish or encrusting growth? 3. How many dives can you make?

Once you have the basic facts, plan

your photo dives. To us, rule #1 is to concentrate on the most prominent features of the wreck that fit your lens and ignore all else. Rule #2 is if you can make more than one dive, group your shots by the lenses used. For example, use one dive to take wide angle shots and a second dive for close-ups. If you take two systems—wide angle and close-up—photo composition will suffer because your concentration is split between two systems. Rule #3 is to process your Ektachrome slides ASAP and then go back to the wreck again.

If your number of dives will be limited, spouses (or buddies) who share photo credits have an advantage: One person can shoot wide angle while the other shoots close-ups. Jim, for example, takes a Nikonos and 15 mm lens for wide angle while Cathy takes a housed Nikon and 55 mm Micro-Nikkor lens for medium dis-

tance and close-up shots. The major problem with this system is that the close-up photographer must often pose for the wide angle photographer and may not be able to get his/her desired shots. If we can make several dives, Cathy will pose with her housed Nikon on one or more dives. Later, Jim will leave his camera topside and hold Cathy's second strobe while she takes close-ups.

Your timing is critical! Be aware of the other divers' plans or they can foul your shot. On our photo trips, we divide the wreck into sections. Each buddy team is assigned an exclusive section and teams take turns photographing sections on a rotation basis. We all get better pictures and we all stay friends.

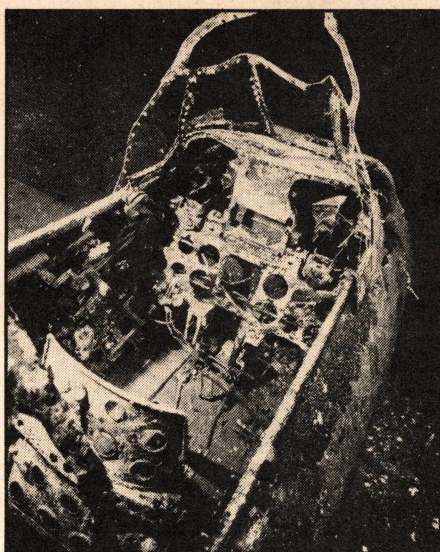
WIDE ANGLE SUBJECTS

A wide angle lens is best for establishing shots—pictures that give the viewer a

feeling for the massive bulk of a sunken ship. While you usually can't show an entire ship in a single picture, you can show selected parts of the wreck that will convey the feeling of vastness.

Bow and stern shots are effective because they are easily recognized by non-diving viewers. The huge propeller of the *Gosei Maru*, in Truk Lagoon, especially with a background diver for size perspective, can be a dramatic shot. Likewise, a view down the bowsprit of the *Rhone*, in the BVI, shows the long lines of her sleek hull. The *Chicuzen* in the BVI; the *Cartanser* in the USVI; the *Oro Verde* in Grand Cayman; the M/V *Cement* (Theo's Wreck) in Freeport, Grand Bahama; and the *Mahi* off Oahu, Hawaii, are all examples of intact wrecks that will look like sunken ships in your pictures.

Pictures of a ship's mast or a kingpost, taken while looking upward from the deck, may also produce the desired effect. The vertical bulk of the mast implies the bulk of the ship. Upward angle shots that show the railing of upper decks and the ladders leading up to these decks also imply bulk. Downward angle shots are effective if decking and superstructure are light and reflective and if you are in shallow water with enough sunlight for the exposures. If the wreckage is dark or if there is a dark opening of a large hold, try a downward shot of a diver with a yellow tank and light skin or colorful diving



Two strobes light up the cockpit of a zero fighter plane inside the *Fujikawa Maru*.

hampered by poor visibility. Therefore, if you can't clearly photograph large sections of the wreck, look for identifiable parts such as anchors, links of anchor chain, winches, engines and propellers. However, the encrusting growth of some wrecks, especially those in Truk Lagoon, can completely obscure parts of a wreck. A winch or railing, for example, can become an array of lush, colorful corals.

Schools of fish can add life to wide an-

gles and superstructures. These pictures emphasize the lonely, somber mood of a sunken ship. If you add a diver, the pictures emphasize exploration.

2. In turbid water, using sunlight eliminates the problem of backscatter—the reflections of strobe light bouncing back from suspended particles in the water.

3. Planning to take some sunlight exposures eases emotional stress if your strobe fails during an expensive trip. You simply shift to natural light techniques.

Even in turbid water, upward silhouettes often produce excellent results. When aiming toward the bright sun, don't forget to bracket to the wider apertures because bright sun can fool your exposure meter and lead you to underexpose.

You can often use sunlight for interior shots as well. If, for example, shafts of sunlight are streaming through skylights, hatches or other openings, use long shutter speeds to admit enough light for the exposure and small apertures to give the necessary depth of field. You may wish to combine the long shutter speed with a touch of weak strobe fill. When set for B (bulb), a camera will fire the flash and the shutter remains open as long as you press on the shutter release. A Nikonos IV-A will trigger a non-dedicated strobe in the A (automatic mode for sunlight exposures) position. With a dedicated strobe (one that turns on the ready light in the viewfinder) you must set for B. In the manual mode, the Nikonos V will trigger the strobe at 1/60, 1/30 or B.

With long shutter speeds, both the camera and the subject must not move. Brace the camera against solid wreckage or use a tripod. If you braze a small swivel with a 1/4-20 bolt to a small C-clamp or a pair of vise-grip pliers, you can often attach the camera to various objects.

Exposure metering is tricky. Although you may wish to expose for shafts of sunlight streaming down through broken wooden decking, skylights, portholes and hatches, the meter will respond to the darkened interior of the wreck. Therefore, bracket to the higher-numbered stops. If you are using an automatic exposure control for sunlight, bracket by changing the film speed dial. To keep a dark area dark, set the dial for a higher film speed than you are actually using.

For your closer wide angle shots of winches and other machinery, use strobe fill to accent colors and details or to provide primary light if sunlight is dim. A single wide beam strobe held above the camera, and aimed downward at an angle to the subject, can spread light over the entire picture area. And, if the camera is turned for a vertical format, aim the strobe in from one side.

If the strobe is aimed from one side, the shadow side of the picture may be too dark. Therefore, you may need to add a second strobe. If one of these strobes is triggered by a slave sensor, you may

(Continued on Page 102)

PHOTOGRAPHY HOW TO DO IT WELL

TEXT AND PHOTOGRAPHY BY JIM AND CATHY CHURCH

gear against this dark background.

Shots taken outward through an open hatch or porthole are also effective if an expanse of decking and topside equipment is shown in the distance. These pictures emphasize the lonely darkness of the interior. One or more distant divers in the background can add important size perspective to establishing shots. But shoot a few without the divers to use as ending scenes in your slide shows.

Sometimes smaller wrecks are easier to photograph because you can often include most of the wreck in a wide angle picture. When you show your slides, non-diving viewers may be disappointed if they don't see an entire ship. (They may compare your pictures to the three entire submarines they recently saw in a single scene of a TV movie, not realizing these were models photographed in a tank.)

Wide angle wreck photography can be

gle pictures and are often easy to photograph at wrecks that are frequently dived. As examples, schools of barracuda and other fish often hover over the *Chicuzen* and many other wrecks. Clouds of minnows can sometimes be found in the holds of the *Oro Verde*. Large, diversified Napoleon wrasse visit the *Jolanda* in the Red Sea. The 150 foot bow section of the *Rhone* is packed with thousands of grunts and the swarms of sergeant majors at the *Balboa* and many other wrecks are popular wide angle subjects.

WIDE ANGLE LIGHTING

Natural light is often best for your wide angle long shots. If there is enough available, it gives you these advantages:

1. Your pictures look realistic. You can use downward camera angles if the wreckage is light and reflective and upward to silhouette railings, masts,

MARES EXPLORER 22 SPEARGUN

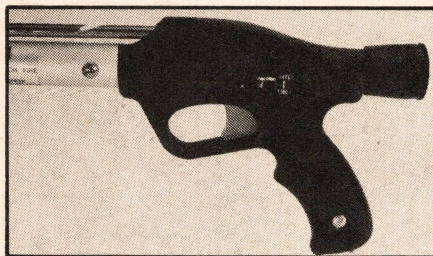
Distributed by SeaQuest

TEXT AND PHOTOGRAPHY
BY FRED FISCHER

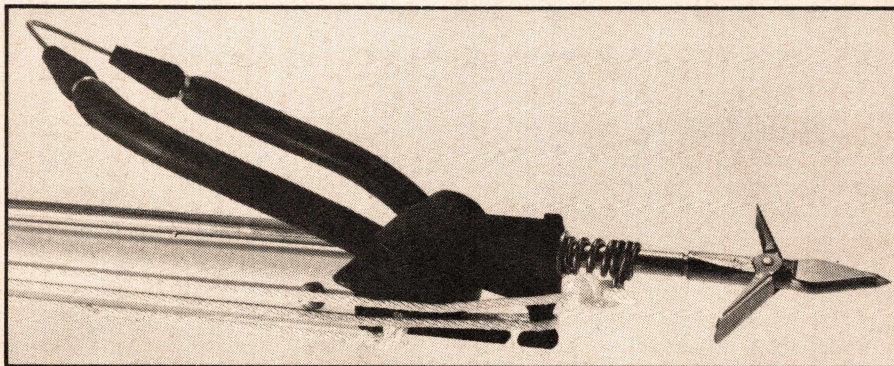
As the boat churned through the waters off Tourmaline Surfing Park, La Jolla, California, Dennis seemed to ramble on forever about the hundreds of pounds of halibut he had taken in the shallow sandy reefs. I was in the neighborhood to test the Mares Explorer 22 speargun but it seemed as if all the fish had fled. This single banded gun ejects a 5/16 x 34 inch shaft and is ideal for taking reef fish at close range. Although only one, 1/2 x 18 inch sling is included, the shaft is notched for one additional band. A heavy duty braided nylon shock cord limits the range to approximately six and one-half feet. The stock twin barbed, plated steel tip is good for softer fleshed fish.

Awhile later and farther offshore, several sheephead watched as I tested the Explorer 22 speargun for accuracy. It was reassuring to find that the aluminum muzzle was designed to align the pull of the sling parallel to the shaft for minimum deflection. I was able to hit targets at four to five feet regularly. The triggering action was smooth enough for "squeezing off" the shots.

Loading the Explorer 22 required relatively little effort owing to the small sling and any length beyond the one inch of the butt stock would have been wasted. I found the safety had to be in the fire position when inserting the shaft, but was warned to switch to safe position when pulling the sling. It was disappointing to find that the shock cord was cut several inches short and did not include a rubber stretch segment. On the other hand, it was gratifying to see the cord dress closely along the barrel to minimize snagging in the kelp. As I switched the aluminum grip back and forth between my gloved hands I found it performed most conveniently on the right owing to the location of the safety. My thumb worked best at toggling the well marked lever up



The Explorer 22 has an aluminum handle with a raised shield which protects the toggle-type safety. The spear shaft has two notches to accommodate an optional second rubber band. The muzzle aligns the pull of the band parallel to the shaft.



and down with little, if any, sound. A shield protects the safety from shifting accidentally. Unlike many guns this one will sink to the bottom after it is fired. The one inch hollow aluminum barrel does not have plugs for a flotation chamber. Fortunately, enough clearance is provided to allow rapid drainage when the gun is stood on end during storage.

Similar to spearguns previously distrib-

uted by Voit Swimaster and JBL, the Explorer series is completely new, and is part of the Mares quality line of spearguns distributed by SeaQuest. The company offers a one year warranty against manufacturing defects. For more information stop by your nearest SeaQuest dealer. The \$80 suggested retail price is definitely a good value for the quality-made Explorer 22. >

the Jean-Michel Cousteau

A body hugger for both warmth & style

Signature Wetsuit

BY JIM WALKER

U.S. Divers offers two complete lines of sport diving equipment: The traditional U.S. Divers® line and the Aqua-Lung® Pro Line. This latter includes an elite signature series designed under the guidance of Jean-Michel Cousteau. An example of these items is the Jean-Michel Cousteau signature wetsuit. A top of the line garment, it includes all the extras as standard equipment. The suit is made of 6 mm (1/4 inch) thick, nylon two, multi-stretch neoprene. This is softer and stretchier than previous types of neoprene. It fits snugly without restricting your freedom of movement and without giving you that stiff, claustrophobic feeling. The stretchy neoprene conforms to your body shape and reduces the occurrence of air pockets which fill with cold water. Thus, the suit is very warm.

The JM Cousteau wetsuit has contoured panels which further reduce unwanted space between the suit and body. Placed on a hanger, the suit appears to have been molded around someone's body—the contours are that definite. The suit has special panels under the arms and in the crotch which reduce stress on seams in these critical locations.

The knees of the suit are protected by sewn on pads and the legs are bent to assume the ideal angle for maximum comfort while swimming.

The JM Cousteau farmer john has convenient Velcro® closures on both shoulders as does the beavertail on the jacket. The jacket of the women's model is French cut at the hips.

All seams on the suit are glued, blind stitched on the inside and lock stitched on the outside. These don't penetrate completely through the neoprene, eliminating leaks. The suit's edges are all bound with stretchy seam tape which is sewn on. This not only protects the edges and seam ends, but also gives the suit a neat, stylish appearance.

The Jean-Michel Cousteau signature wetsuit is 1/4 inch nylon two multi-stretch neoprene. The men's version comes in one or five zipper models. The farmer john has Velcro closures on both shoulders. The suit's knees are protected by sewn on pads.

The JM Cousteau suit offers the diver a choice of one or five zippers. (The ladies suit only comes in the five zipper version.) All zippers are made of non-corroding Delrin and have Delrin tabs. All are backed by neoprene flaps for warmth and comfort. The optional zippers on the wrists and ankles facilitate donning and doffing the suit but this is already easy owing to the stretchy neoprene.

The suit is available in an attractive

combination of black with yellow trim or navy blue with silver trim. The single zipper model is \$315 and the five zipper is \$325. The suit comes in men's and women's styles in small, medium, large and extra large.

Diving with the JM Cousteau suit was a pleasure. It was easy to don and doff, comfortable and warm. Try one on at an Aqua-Lung Pro Line dealer that offers the Jean-Michel Cousteau signature line. ➤

photos/Bonnie J. Cardone

PARKWAY'S

8017 SPG

Color coded and
easy to read

BY BONNIE J. CARDONE



Parkway's submersible pressure gauge is designed to be read easily: The curved lens magnifies the large numbers; the face is luminescent and color coded for safety.

Often called *the* most valuable diving instrument, the submersible pressure gauge was introduced to SKIN DIVER readers through an ad in the August 1955 issue. The manufacturer of the SeAir, however, had a great deal of difficulty convincing divers they needed this piece of equipment. The SeAir originally sold for \$24.95. Even after the price was reduced to \$19.95, the gauge did not sell in great numbers. The company disappeared from SKIN DIVER Magazine pages four years later.

SPGs have changed little in the last 29 years. The SeAir was a side reading gauge with a neoprene boot that contained a C-shaped Bourdon tube mechanism. In the late 1970s most equipment manufacturers switched to spiral wound Bourdon tubes because they have fewer parts and, thus, are considered more shock resistant. Somewhere along the line everyone put their SPGs on swivels and, space age plastics became the most commonly used case materials. Other than these modifications, the only changes have been to the dial faces.


Parkway's 8017 is a good example of

a modern SPG. It has a tough ABS-Cyclo-lac plastic case with an ethylene propylene boot for added shock protection. The polycarbonate lens magnifies the dial face, which carries both standard and metric calibrations in large numbers. The face is luminescent so it can be read easily in low light conditions. In addition, the dial face is safety coded and designed to be used with Parkway's 8019 depth gauge. On both, blue means safety (depths shallower than 35 feet and pressures of more than 500 psi); red means danger (depths below 130 feet and pressures of less than 500 psi).

The reason SPGs have changed so little in almost 30 years is because their initial design was so good. In 1979 the U.S. Navy Experimental Diving Unit in Panama City, FL tested 14 SPGs to determine which ones were suitable for use by Navy divers. The results? All were found acceptable. SPGs were designated "open purchase items," meaning a Navy diver could buy any model and be assured it met Navy standards. The Navy also found the gauges "designed to withstand heavy wear and tear...."

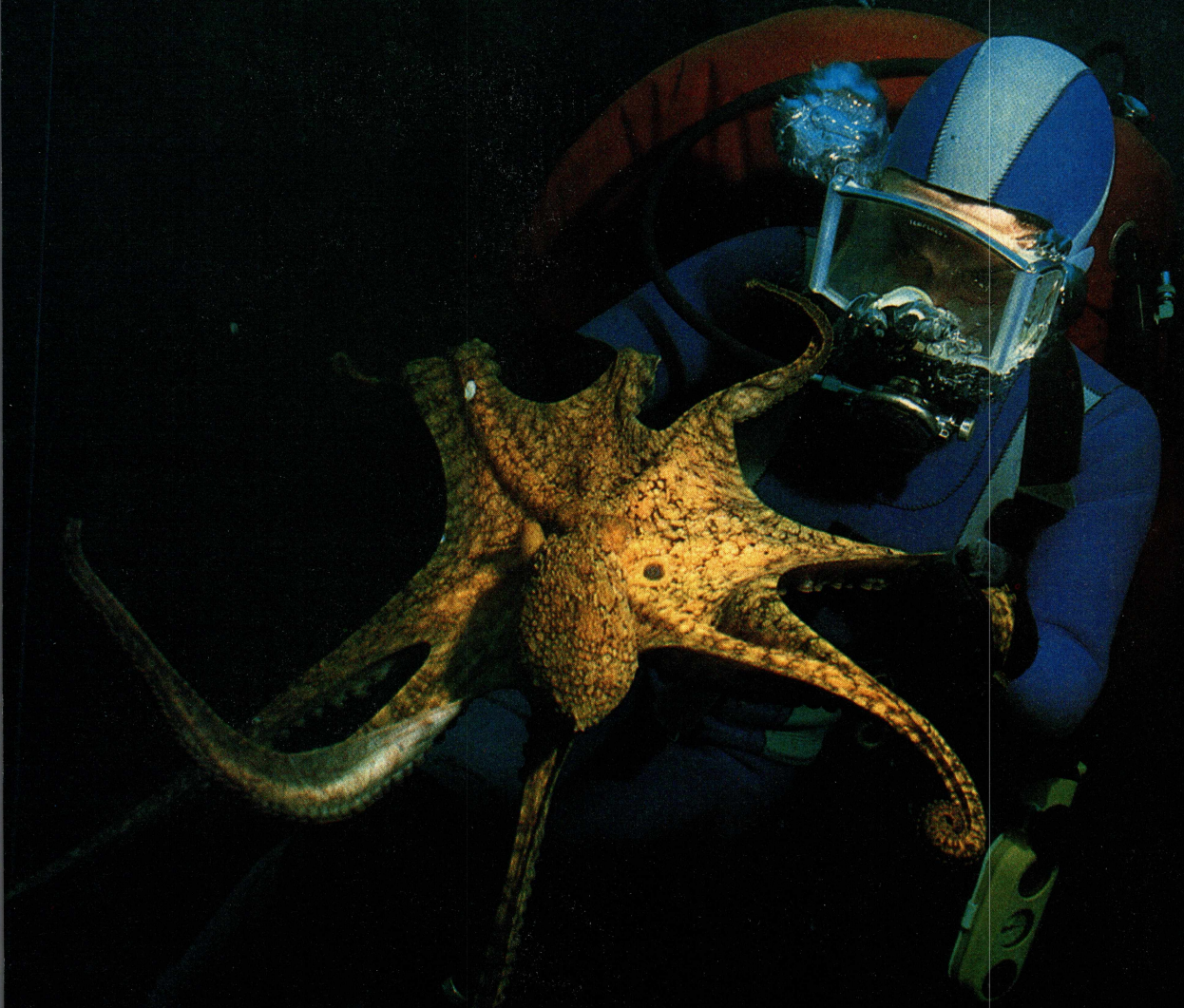
In the Panama City tests none of the gauges deviated more than ± 250 psi at higher pressures or ± 100 psi at lower (0-500) pressures. Some were more accurate. According to Frank Sanger, Parkway's president, the spiral wound 8017 is accurate to within ± 5 percent. This means the gauge would deviate no more than ± 175 psi at 3,500 psi or ± 25 psi at 500 psi.

If you don't have to worry about accuracy or durability, there is only one criterion that should determine which gauge you buy: It should be easy for *you* to read. Parkway's 8017 should meet almost everyone's standards for an easy to read dial face. To recap: It has large numbers made even larger by a magnifying lens; it is luminescent; it is safety coded.

Considering that an SPG virtually eliminates out of air emergencies when properly monitored, lasts practically forever and needs little care (rinse in freshwater and let dry), its price makes it an incredible bargain. Parkway's lifesaving 8017 sells for \$69. (A console containing the 8017 and the 8019 depth gauge is \$121.) See it at your Parkway dealer. 

SANTA BARBARA

AND THE NORTHERN CHANNEL ISLANDS

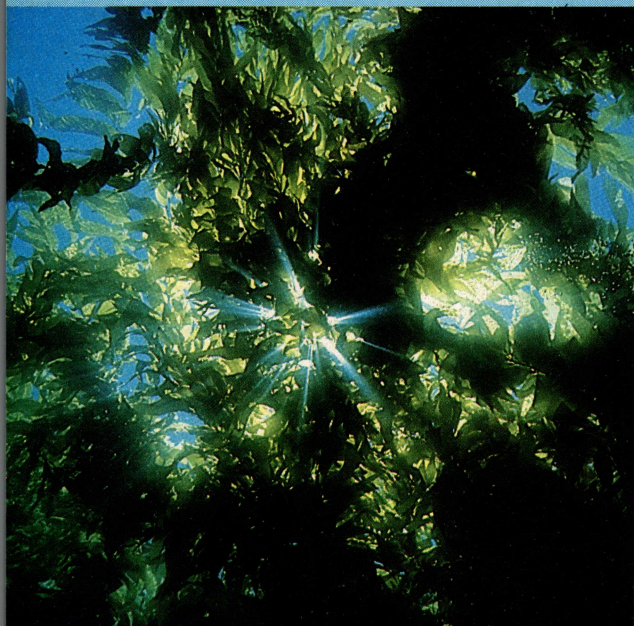


SDM EXCLUSIVE DIVE GUIDE

SANTA BARBARA

Gateway To The Fabulous Channel Islands

TEXT AND PHOTOGRAPHY BY MARTY SNYDERMAN



cover photo/Eric Hanauer

Diving in the Santa Barbara area encompasses a variety of beach sites as well as exciting spots around the Northern Channel Islands—San Miguel, Santa Rosa, Santa Cruz and Anacapa. Left: The sparkle of sunlight filtering through a kelp canopy typifies the U/W conditions found off the islands.

Looking over the water from the back deck of the *Conception*, I could feel the eagerness for an early morning dive building inside me. The air was crystal clear and the iridescent blue water flat calm. A quick check on water conditions indicated there would be no surface current to contend with. Golden kelp fronds in the surface canopy rustled in the warm breeze generated by a high pressure system like those that so often hang off of the California coast. Air temperature was in the mid 70s (°F) and the water temperature only 10 degrees less. Peering over the port side I watched a shimmering school of silver jack mackerel dart through the kelp forest below. As the fish swam past, I realized I could see details along the bottom some 60 feet below. Diving conditions were perfect.

Glancing around the spacious stern I realized just how much excitement the conditions had generated. Everywhere I looked divers were gearing up. Some had goodie bags and abalone irons, others were doing last minute checks on their spearguns and from the galley I could hear a group of four divers from Denver making a bet about who would get the largest lobster.

Only a few moments later the voice of Captain Roy Hauser came over the PA system. As he completed the site briefing, he added "Let us know if there is





photo/Bonnie J. Cardone

Movie & Video Available

Award winning U/W Cinematographer, **Bill MacDonald** has just completed a 15 minute film illustrating how comfortable and enjoyable it is aboard our two boats, (The TRUTH & CONCEPTION). The film features several varieties of fish along with seals, abalone, kelp beds, lobsters, and a host of other marine life we encounter at the Channel Islands. The film is available in 16mm, beta or VHS video format. Trips on the TRUTH & CONCEPTION are scheduled through many Dive Stores and Clubs. For individual reservations and information, call the number listed on the date of your choice. For complete Boat Charters and information regarding our 15 minute film, contact: TRUTH AQUATICS INC., Sea Landing Breakwater, Santa Barbara, California 93109 or CALL (805) 965-7543.

1984 ADVANCED CHARTER DATES ABOARD CONCEPTION

WHEN	WHO	PHONE NUMBER
Aug. 2-3-4-5	Finstad's Scuba Venturers	408-476-4201
Aug. 9-10-11	Dolphin Swim School	916-929-8188
Aug. 12 & 13	Water Pro	808-543-3483
Aug. 14-15-16-17-18	Aquatic Center	714-650-5440
	Tom Campbell	805-965-4901
Aug. 19 & 20	Scuba Tours	415-283-8343
Aug. 21-22-23-24-25	Anchor Shack	415-825-4960
Aug. 26-27-28-29-30	Malibu Divers	213-456-2396
Aug. 31 Thru Sept. 4	Adventure Sports	408-423-3648
Sept. 7 & 8	Tom Campbell	805-965-4901
Sept. 9 & 10	Aloha Diving School	213-846-1320
Sept. 14 & 15	San Diego Photo Society	619-273-6363
Sept. 16-17-18-19-20	Stan's Scuba	408-998-0767
Sept. 21 & 22	Water Pro	805-543-3483
Sept. 23 & 24	Scuba Tours	415-283-8343
Sept. 25-26-27	Jim Cooluris	805-983-2193
Sept. 28-29-30	Calif. Wreck Divers	213-390-5171
Oct. 3-4-5-6	Ocean Odyssey	408-475-3483
Oct. 7-8-9	Adventure Sports	408-423-3648
Oct. 10-11-12-13	Finstad's Scuba Venturers	408-476-4201
Oct. 14 & 15	Flipper Dippers	408-446-1908
Oct. 16 & 17	Black Barts	714-496-5891
Oct. 18-19-20	Scuba Tours	415-283-8343
Oct. 21-22-23	Anchor Shack	415-825-4960
Oct. 25-26-27	Water Pro	805-543-3483
Oct. 28 & 29	Scuba Tours	415-283-8343
Oct. 30-31-Nov. 1	Ron Barney	415-388-8124
Nov. 2 & 3	Bamboo Reef	415-361-6694
Nov. 4-5-6	Stan's Scuba	408-998-0767
Nov. 8-9-10	New England Divers	415-434-3614
Nov. 11-12-13	Tom Campbell	805-965-4951
	High Desert Divers	303-243-4818
Nov. 15-16-17	Marin Skin Diving	415-479-4332
Nov. 18 & 19	Inter Ocean Tours	415-444-5833
Nov. 20 & 21	Bob Wideman	408-462-4754
Nov. 22-23-24	Stan's Scuba	408-998-0767
Nov. 25 & 26	Wet Pleasure	408-984-5819
Dec. 1-2-3	Finstad's Scuba Venturers	408-476-5201
Dec. 8-9-10	Anchor Shack	415-825-4960
Dec. 14 & 15	Discovery Charters	213-790-8276
Dec. 29-30-31	Under Sea Schools	503-883-2016

1984 ADVANCED CHARTER DATES ABOARD TRUTH

WHEN	WHO	PHONE NUMBER
Aug. 3 & 4	Marin Skin Diving	415-479-4332
Aug. 5-6-7	Jumbo Reef Enterprises	408-427-1343
Aug. 9-10-11	Sea Sabers	714-544-1853
Aug. 12 & 13	Stan's Scuba	408-998-0767
Aug. 17 & 18	Scuba Tours	415-283-8343
Aug. 19 & 20	Wet Pleasure	408-984-5819
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Without question, there is some excellent diving to be enjoyed in Central California between Port Hueneme to the south and Point Conception to the north. Experts from all over the world wholeheartedly agree.

While many species of marine life found in Central California are also found

down south, a distinguishing factor between the areas is that the northern islands and central coast are far less pressured. That translates to more game and more photographic subjects which are far less wary of divers. The northern kelp forests often consist of larger, sturdier plants which support bountiful fish populations and a wealth of invertebrates.

NORTHERN CHANNEL ISLANDS

Certainly the major attraction of Central California diving is the Northern Channel Islands. These lie roughly in the lee of the great California bight and are comprised of San Miguel, Santa Rosa, Santa Cruz

and Anacapa. Geologists maintain that the northern islands are a seaward extension of the Santa Monica mountains.

Today the islands are virtually uninhabited except for wildlife populations which include numerous bird species such as the endangered brown pelican, at least six species of marine mammals and the island fox. There are no hotels, airports or supermarkets on any of the Northern Channel Islands, and the only way to get there is by boat. The end result is that despite the fact that they lie only a few miles offshore one of the nation's most heavily populated states, the islands remain a natural wilderness.

San Miguel is the outermost and, therefore, westernmost of the northern islands. Being the most exposed to the strong winds and currents that often whip around Point Conception, San Miguel is the least dived of the islands. However, when conditions allow, the diving at San Miguel is quite dramatic. Two of the most noteworthy areas, **Wilson Rock** and **Richardson Rock**, will rank at the top of any list of world class dive sites. In both areas the rocky reef structure provides a perfect setting for a vast array of colorful invertebrate life and large game fish. Not only are the colors astounding, but the amount of life per square yard of reef is overwhelming. In many places you can't even see the rocky reef because of sheer quantity of animal life.

Just a few miles north of San Miguel, Wilson Rock just barely breaks the surface from where steep drop-offs plunge to depths of over 180 feet. While there are some flat, shallow ledges, the drop-off diving is the best. Large rockfish are commonly taken by spearfishermen and it is not uncommon to see a sleek blue shark or a 300 pound black sea bass cruising along the reef.

Wyckoff Ledge is another of San Miguel's many highlights. Dropping rapidly from ledges at only 20 feet to depths of 120 feet or more, the reef is full of shelves, crevices and caves which harbor everything from seafans to large white sea bass.

The feature attraction of San Miguel for many divers is the opportunity to witness the antics of the island's pinniped population. Six different species of sea lions and seals can be observed and that is believed to represent the greatest variety of pinnipeds found in one locale anywhere in the world. The species include California sea lions, Stellar sea lions, harbor seals, elephant seals, northern fur seals and an occasional Guadalupe fur seal. Pt. Bennett, along the southwest edge of San Miguel, is the place called home by over 10,000 breeding animals during late spring and summer.

Santa Rosa offers some exceptional diving for photographers and game takers alike. The staircase ledges and caves of **Talcott Shoal** consistently produce as many limits of large lobster as anyplace

A group of sea lions cavort in shallow water near a Northern Channel Island rookery.



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in California. Plenty of big halibut, white sea bass and lingcod are regularly taken as well. It is advisable to dive the Shoals via one of the area's charter boats as the region covers more than 20 square miles and navigation can prove tricky. **Sandy Point**, at the northwest corner of the island, is well known for its halibut populations. **Bee Rock**, off the west side of Santa Rosa, provides adventurous diving. Cracks and crevices in the rocky reef come in sizes just small enough to look into as well as those caverns large enough to swim through.

Extensive kelp forests and shallow diving can be found in many places along the lee side from **Johnson's Lee** to **East Point**. Johnson's provides an excellent anchorage with moorings available in a pinch. **Beacon Reef** just off Carrington Point is another of the spots too good to pass up, noted for beautiful reef forma-

tions and plenty of lobster.

Santa Cruz, 21 miles long, is the largest of the Channel Islands. Privately owned it is quite mountainous and the seaside cliffs create a real feeling of being in the wilderness. Because of its size and orientation, visibility is often better than at the neighboring islands. Better yet, unique water conditions produced by the converging cold waters of the California Current from the north and the warmer California Counter-Current, which hugs the coastline from the south, produce an incredible variety of marine life. In essence, divers enjoy the best of the marine life supported by both currents. Garibaldi and moray eels, typical of the southern islands, are much more commonly seen at Santa Cruz than at Santa Rosa and San Miguel. At the same time you can enjoy a variety of colorful anemones, seafans, brittlestars and lingcod which are generally more prolific in cooler waters to the north. **Scorpion Anchorage** and **Little Scorpion** are great dives in shallow areas where the current mix is quite noticeable and plenty of game is to be had by skillful hunters.

The **Potato Patch**, the exposed area between Santa Rosa to the west and Santa Cruz to the east, is often rough owing to the current convergence and winds, but when conditions allow, the div-

ing is superb. **Fraser Point** near the anchorage at Forney's Cove on the west side is well known for a beautiful kelp forest and scenic rock formations where lobsters are often piled on top of each other. A healthy kelp forest community and protected, shallow water make **Morse Point** a photographer's favorite. The well protected lee, from **Willows Anchorage** to **Smugglers Cove** offers a variety of scenic spots with a fair share of fish, abalone and lobsters.

One of the most popular dive sites of Santa Cruz is **Gull Island**. Diving depths range from 10 to 70 feet and visibility commonly exceeds 50 feet in the surrounding waters which are often sheltered from prevailing weather conditions. The kelp forests at the island are prolific and the reefs are full of interesting photographic subjects. Curious sea lions and harbor seals are regularly observed.

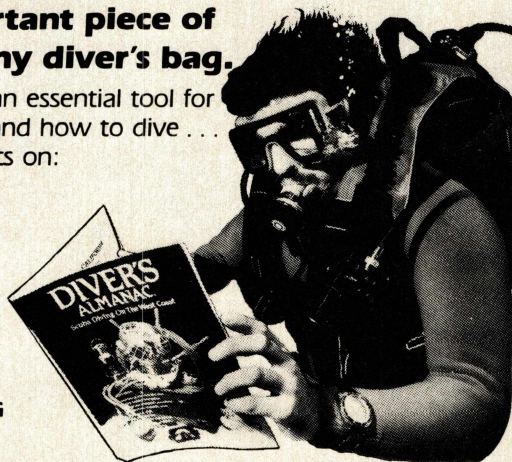
The name **Anacapa** is derived from the Indian term *Ayapah* which means ever changing or mirage. Approaching the island on a misty morning will make you realize the Indians named her well. The island, only about one square mile in size, can accurately be described as a series of three mountain tops connected by sand bars. Only 11 miles offshore the coastal community of Oxnard, Anacapa provides an excellent selection of dive

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sites. Perhaps the most scenic area that can be dived on a regular basis is the **Goldfish Bowl**. The rocky bottom provides an excellent base for a beautiful kelp forest community. Diving can be as shallow as 30 feet and most drop-offs are gradual. While lobster and lingcod are sometimes taken, the main attraction is the beauty of the forest where schools of bright orange garibaldi, moray eels, sculpin and a variety of reef fish such as blue banded gobies and blennies greet divers.

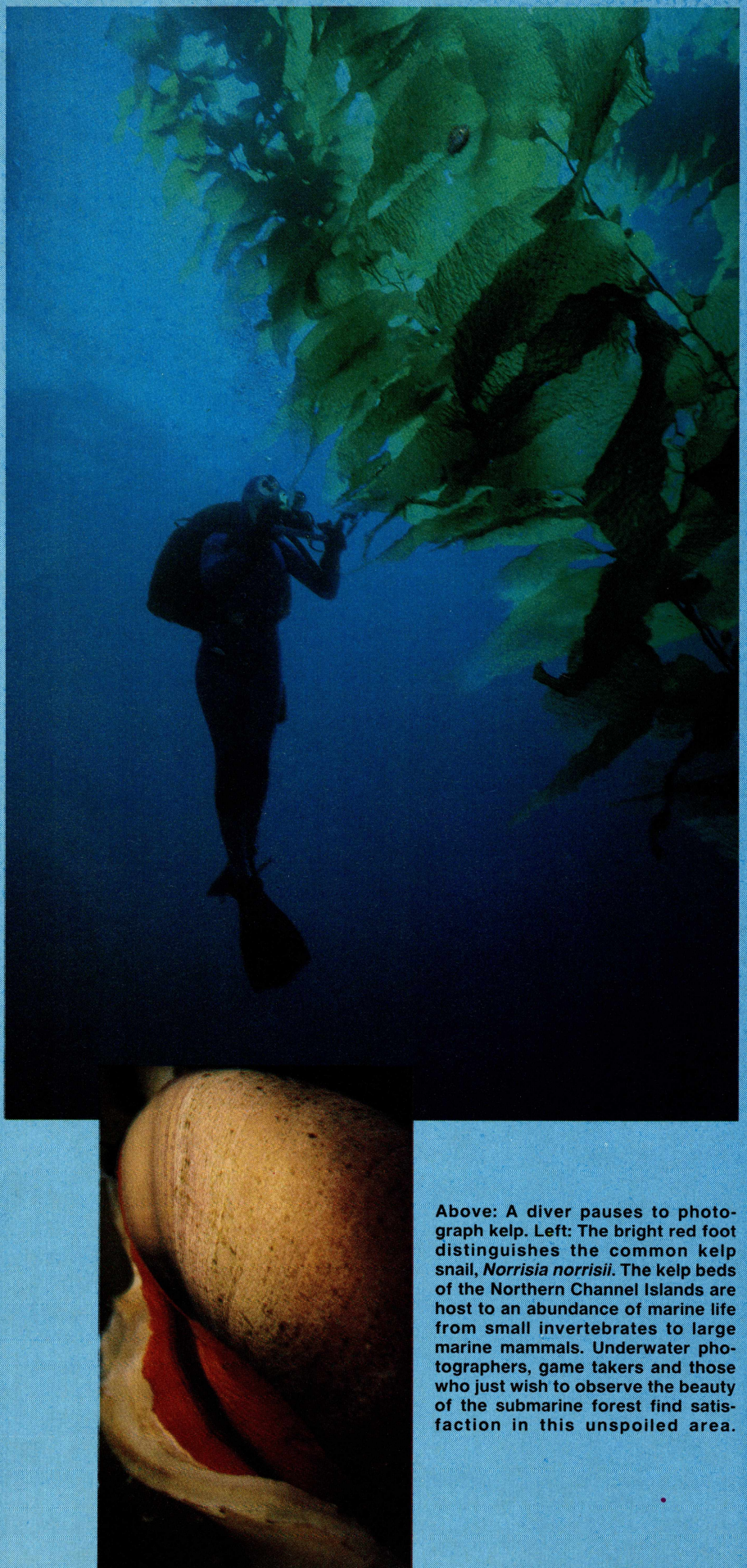
Another of the more popular sites at Anacapa is the well protected shallow water in **Frenchy's Cove** on the lee side of the west island. Just a little farther west you'll find healthy kelp forests full of calico bass, sheephead, abs and scallops. The wreck of the **Winfield Scott** lies just east of Bat Ray Cove, on the lee side of middle island. The vessel was a wooden sidewheel steamer that ran aground in 1853 while carrying 450 passengers and over \$800,000 in gold. Both **Arch Rock**, a landmark of the Channel Islands on the east end of East Anacapa, and **Cathedral Cove** offer good diving and excellent opportunities for topside photography. At the cove, on flat days, you can take a skiff into a cavern in the side of the island that is often filled with sea lions.

The northern islands are easily accessible via the fleet of professional dive charter boats. Charter boats serving the northern islands are based from Santa Barbara in the north to San Diego in the south. It is fair to say that diving in California can be more demanding than in some protected tropical resorts and those boats which remain in business have learned to cater to the special needs of divers in California waters. Comfortable bunks, hot meals, hot showers, reliable compressors and knowledgeable crews that are both considerate and safety conscious are the rule.

For trip information and bookings, you can contact the boat and they will put you in touch with the dive store or individual chartering the boat for a given time frame. If you have a calendar of a given boat's schedule and the charterer, your best bet is to contact the charterer direct and they will provide you with details.

THE MAINLAND

Santa Barbara, about two hours driving time north from Los Angeles, is the largest and most well known of the cities along the central coast. Spread out along the foothills of the Los Padres National Forest, the setting is striking to say the least. Like most California communities, Spanish influence is evident everywhere, especially in architectural flavor. You'll quickly notice many street signs and public announcements are printed in both English and "Español".



Above: A diver pauses to photograph kelp. Left: The bright red foot distinguishes the common kelp snail, *Norrisia norrisii*. The kelp beds of the Northern Channel Islands are host to an abundance of marine life from small invertebrates to large marine mammals. Underwater photographers, game takers and those who just wish to observe the beauty of the submarine forest find satisfaction in this unspoiled area.

Santa Barbara deserves her reputation of being a very well maintained, almost immaculate community. Like Oxnard and Ventura to the south, Santa Barbara is considered to be both a retirement community and a beach town. More to the point, there is plenty of money to keep the town looking its best and a variety of activities for beach goers.

In all three communities, you will have no trouble finding moderately priced hotels and motels, and for those who want something extra on their vacation, luxurious accommodations are easy to book as well. Restaurants are plentiful and you can satisfy your cravings for fresh seafood, Mexican, Japanese, Chinese and good old American fastfood, all within a few blocks of the beachfront. If you have never had abalone before, try some in California. It is the only place in the United States you'll get the opportunity because this delicacy may not be exported from the state.

Daily life along the central coast offers quite a contrast to the hustle and bustle of Los Angeles and San Diego. Nowhere is the laidback California lifestyle more obvious. But don't get the wrong impression, Santa Barbara, Ventura and Oxnard are full service communities.

Along the beachfront in Santa Barbara, Oxnard and Ventura you'll find plenty to do if you enjoy throwing a Frisbee; renting a boardsailer or sailboat; roller skating; bike riding; or playing volleyball. In all three areas you should have no problem parking close to the beaches and there are plenty of public facilities at most sites. While at the beach you will be within easy walking distance of an ice cream cone, beer, snack or complete meal.

All of the towns have excellent athletic clubs, golf courses and tennis courts that can be utilized by visitors. If you desire to spend a day fishing, a variety of boats are available for hire and if nightlife is your pleasure, there is an excellent variety of discos, bars and nightclubs.

BEACH DIVING

Surprising to many, there is plenty of good beach diving along the central coast. As a rule, beach access is good and swims to nearby reefs and kelp forests are usually less than 200 yards. As in the northern islands, marine life along the beaches is far less pressured than off the beaches of the major metropolitan areas to the south. Marine species are diverse and there is plenty of action for macro photographers and anyone who is after big bugs, abalone, lingcod, calico bass, halibut, rockfish and other game. Visibility varies from 10 to 20 feet off the beach, about one-fifth what you normally get at the islands. Bottom terrain is commonly sand patches until you are past the surf line, where after a short swim you can reach nearby kelp beds. In some spots, however, you'll encounter rocky reefs right up to shore.

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The four Northern Channel Islands plus Santa Barbara comprise the recently formed Channel Islands National Park. While the surrounding waters are managed and regulated by the California Department of Fish and Game, the lands are overseen by the Channel Islands National Park Service, 1901 Spinnaker Drive, Ventura, CA 93001; (805) 644-8157.

Regulations concerning going ashore on the different islands vary. San Miguel is owned by the U.S. Navy and it is necessary to make reservations and acquire a permit for day use through Park Headquarters. Santa Cruz and Santa Rosa are privately owned. In order to go ashore you must first receive permission from the Santa Cruz Island Company (for Santa Cruz) or the Vail and Vickers Company, 123 West Padre, Santa Barbara, CA 93105 (for Santa Rosa). Parts of Anacapa, East Island and Frenchy's Cove are available for both day use and overnight camping. No fees are required, but you must make reservations through the National Park Headquarters and obtain permits. You will find outdoor toilets and a small campground at East Anacapa.

The waters for one mile around each of the islands are California State Ecological Reserves. The Channel Islands Marine Sanctuary encompasses six nautical miles around each island. This means that the only animals which may be taken from these waters are those listed in California Fish and Game Laws.



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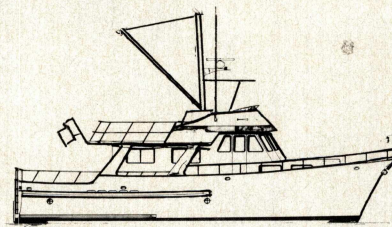
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Point Conception is the major landmark which divides the waters of Central and Northern California. The beaches in the Santa Barbara basin, from Point Conception to Port Hueneme, are well protected from ocean swells and the legendary winds north of the point by the combi-

nation of the natural breakwater created by the Channel Islands and the general east/west orientation of the coast in the basin. To the north water temperatures are generally 10 to 20 degrees cooler and the surf is usually higher.

There is a fine art to beach diving along the California coast. Simply stated, there are some days when the conditions are perfect and there are also days when smart divers should bring along a good

book, a Frisbee and have plan B firmly in mind. Surf entries require correct techniques. If you are not experienced at reading the water and have never entered through the surf before, check with area dive stores about local conditions and the possibility of organized dives. As is the case at the islands, diving conditions are generally best and most predictable in late summer and fall.

The number of dive sites along the central coast is extensive. Conditions and facilities vary considerably, but no matter what type of area you are looking for, it is likely that you can satisfy your desires. The following list provides a north to south overview of the more popular beaches along the central coast.

Gaviota State Park, 33 miles west of Santa Barbara along Highway 101, provides some interesting diving. A nearby kelp forest supplies plenty of game fish. A self-operated launching hoist can be found at the pier. As with most developed state parks, you will find good roads, hot showers, drinking water, campsites with tables and stoves, and hookups for trailers and campers. Day use for state parks is \$3 per car with an \$8 charge for overnights. Reservations can be made through Ticketron outlets. Ticketron can be contacted by writing to P.O. Box 26430, San Francisco, CA 94126 or by calling outlets in communities throughout California. For reservations and information forms call (800) 952-5580.

Tajiquas Beach is a well protected south facing beach with beautiful kelp beds only 300 yards offshore. A rocky bottom close to shore and sand patches beyond the surfline offer good variety in depths to 50 feet. The site is unusual in that numerous kelp plants have attached themselves to the stable sand bottom as opposed to rocky reefs. The area is considered good for game, especially halibut, and it is a fairly isolated, away from the hustle of crowded public beaches.

An interesting rocky bottom at **Refugio State Beach Park** is a haven for a variety of marine species. Macro photographers should have ample opportunity to work with several species of nudibranchs and the waters are known to consistently produce halibut and lobsters. Refugio is an excellent location for a family outing as access is easy and facilities are well developed and maintained. Conditions for boat launching are generally quite good. Hookups are available for trailers and campers.

Two miles farther east you'll find **El Capitan State Beach**, a wide sandy shore about 10 miles west of Goleta along Hwy. 101. There are no large reefs and few rocks, but an extensive kelp bed has managed to do quite well despite the sandy bottom. El Cap is a popular hang-out for the locals and the area is often crowded during the summer. The best diving is generally in late summer and fall when crowds thin out and water condi-

New growth at the tip of a kelp frond. These plants are extremely fast growing.



tions are best.

Naples Reef, approximately four miles southeast of El Cap and two miles southwest of Elwood Beach, offers the best boat diving off the Santa Barbara coast. The reef is almost one-half mile long, varying in depth from 25 to 55 feet at the bottom of the vertical drops. Marked by kelp, there is plenty of game including red and pink abs, scallops, lobster and an occasional white sea bass, a favorite among California spearfishermen. Visibility often doubles that found closer to shore. Boats can be launched from Gaviota or from the Santa Barbara Marina. Locals advise you pay close attention to the currents during tidal changes.

Hendry's is the most popular dive site in the Santa Barbara area owing to the combination of easy access, convenient facilities and the variety of marine life. The best diving can be found in the kelp bed about 100 yards offshore, past the sand patches and surf grass. Stingrays, guitarfish, sculpin and halibut are often seen in the sand.

Considered one of Santa Barbara's prettiest reefs, **Mohawk Reef** is a great place for macro photography with chestnut cowries, scallops and patches of *Corynactis* anemones providing good subjects. Plenty of calico bass and lingcod are taken by spearfishermen. Beware, beach access involves a steep hike down the cliff and a swim of 200 yards.

About five blocks west of La Plata Street, **1000 Steps** (really only about 150), is a good game spot. The reef is honeycombed with caves and it is a natural spot for bugs. While kelp and interesting reefs are found close to shore, the closest restroom is one-half mile away.

Leadbetter Beach is a popular spot for check-out dives in Santa Barbara. The area is well protected, but visibility is generally somewhat less than surrounding beaches. For a popularly dived area, Leadbetter continues to be a surprising game producer. The adjacent park is scenic and there are parking spaces, picnic tables, barbeque pits and showers.

Carpinteria State Beach is a great place to spend a day. A shallow offshore reef and a thick kelp bed to the northwest provide good diving. The park is 12 miles south of Santa Barbara. Facilities are available for campers and there are electrical and sewage hookups as well.

South of Carpinteria the diving is somewhat limited. Most is over sandy bottoms with gradual slopes. Surf begins to pick up the farther south you go and visibility tends to be limited. Halibut chasers do okay, but frankly there are more surfers than divers in most areas until you reach **Loginell Park** in Port Hueneme (pronounced why-knee-me). There you'll find a small kelp bed and rocky reefs.

Considering all that Central California has to offer divers, it is sometimes puzzling to understand why the area is not more heavily dived. In the game of com-

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
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paring dive sites, the waters of Central California easily hold their own with regions that are often more highly publicized and more highly acclaimed. If you are planning a dive vacation this summer or fall, consider Central California. As soon as you hit the water, you'll be glad you did! 

DIVE STORES POINT CONCEPTION TO POINT HUENEME

The following is a list of the full service, professional dive stores located along the coast. These facilities offer a combination of equipment sales, rentals, air fills, repairs, classes, and most lead organized beach activities and trips to the islands. While many dive stores outside of the geographical boundaries of Central California sponsor trips to the islands, this list is intended to help divers find professional services once they reach the coast.

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2172 Pickwick Drive
Camarillo, CA 93010
Charlie Curtis
(805) 647-8344

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Port Hueneme, CA 93041
Roger & Joe McLaren
(805) 488-5615 (12:00-7:00)

Ventura Scuba Schools, Inc.

Ventura Harbor Village
1559 Spinnaker Drive #108
Ventura, CA 93001
Christine Rogers
(805) 656-0167

Poncho's Dive & Tackle

3600 Cabezone Way
Oxnard, CA 93030
Dave Schwendeman
(805) 985-4788

Aqua Ventures

1001 S. Harbor Blvd.
Oxnard, CA 93030
Charlie Curtis
(805) 985-8861

Ocean Antics

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Ventura, CA 93003
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Divers Den

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Underwater Sports

Breakwater Harbor
Santa Barbara, CA 93109
Kevin Franks
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Aquatics of Santa Barbara

5370 Hollister Ave. #3
Santa Barbara, CA 93111
Curt Wiessner
(805) 964-8689

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Goleta, CA 93117
Bob Guthrie
(805) 967-4456

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Goleta, CA 93117
Sal D'Alessandro
(805) 964-0180

Water Sports Unlimited

726 North H St.
Lompoc, CA 93436
Glenn Heidlebaugh
(805) 736-1800

SDM travel

SECTION

"Oh Captain, my Captain, our fearful trip is done. The ship has weathered every rack, the prize we sought is won."

When Walt Whitman penned these initial lines to his famous poem in 1865, little did he realize that Don Stewart, of Captain Don's Habitat, would leap from the pages of his prose over 100 years later—cradling a prize called Bonaire.

Stewart, the captain of a 70 foot schooner, *Valerie Queen*, and his

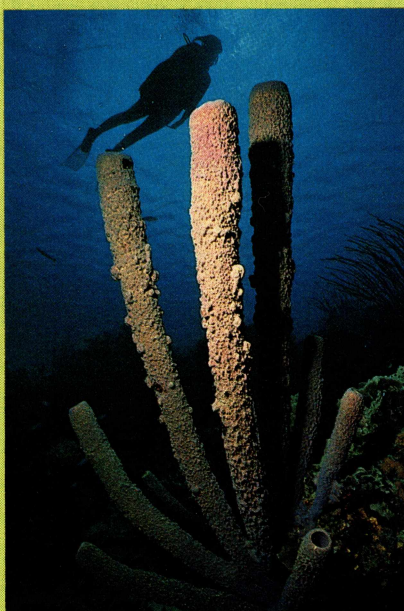
CAP'N DON'S HABITAT

The Great Escape

BY ELLSWORTH BOYD

crew heading for Antigua in 1962, put into Bonaire, in the Dutch Leeward Islands, for emergency repairs. But *Valerie Queen* sank at her mooring, marooning the seamen on an arid, sparsely populated island covered with cactus and overrun with wild goats and stray mules. The crew is long departed but the transplanted California adventurer remains. Cap'n Don has made his home on Bonaire for 23 years, pioneering hotel and tourism development and organizing sailing regattas, a flying club, garden nurseries, a livery, the Lion's Club, recreation for senior citizens and many other civic deeds.

"I was going to circumnavigate the world," the bearded captain with a John Barrymore profile, says. "But the world came to me in a bay of shimmering blue, so clear you could drop a silver coin to the bottom in 50 feet and see its sparkling glitter from the surface. I saw something here that lured me like a magnet—unspoiled



photos/Bill Gleason



reefs, magnificent tropical fish and dazzling lagoons fully protected on their leeward side, all a potential diver's paradise. The island isn't lush but the seas are. They were crying out to me, 'Dive me! See for yourself!'"

That's exactly what approximately 10,000 divers per year are doing today. Captain Don's Habitat, eight

years a diver's delight, is encouraging divers to see the beauty for themselves, with only one condition: look but don't touch. Although Captain Don's civic influence is widely acknowledged on the island, his major accomplishment has been the conservation and preservation of the natural resources beneath the seas. As a direct result of Don's leadership and the support of the Council of Underwater Resort Operators, Bonaire was declared a marine park in 1974.

This simply means protection of the resources by banning spearfishing, coral collecting and anything else that might upset or destroy the natural undersea environment. A major innovation, again one of Captain Don's suggestions, is public moorings where boats tie into floats anchored by large cement-filled drums resting in the sand below. This prevents anchor



photo/Ellsworth Boyd

damage, some so bad years ago that whole patches of staghorn coral were ripped from the ocean floor. Today the reefs are plush and prolific thanks to forethought and guidelines established in the 1970s.

It is from these roots that Captain Don nurtured his Hotel Habitat, a blossoming vacation alternative where the

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CAPTAIN DON'S

diver meshes with the sea for continued understanding and enjoyment. The captain calls Habitat "an ocean-oriented company" whose interests revolve around the recreational sport diver, a sincere environmental concern about the seas, and industrial and scientific research. Adjoining Habitat, on land donated by Stewart, scientists conduct aquaculture studies on conch, the shellfish food staple of most Caribbean islanders. In a high-tech lab, researchers are learning to farm the conch in order to prevent its extinction and promote productivity.

While Stewart remains the driving force behind the Habitat concept, PADI master instructor David Serlin is the catalyst that holds the diving facility intact. Serlin is living every man's dream. He was a pharmacology research consultant for a New York drug company that sported a \$2.5 million budget. Serlin, with 14 people working under him, was a corporate success at age 33, but he thumbed his nose at Madison Avenue, three-piece suits and traffic thicker than smallmouth grunts on Ebo Reef. He followed the sun in 1979 and has never looked back.

Serlin's opening day talk to new guests is factual, punctuated with a little humor, but stresses individual and buddy responsibility. Certified divers are accountable for their own well-being. They are expected to dive conservative profiles, go no deeper than 130 feet and remain within no decompression limits. Repetitive group designation tables must be closely monitored. Serlin stresses that he and his assistant, Andre Nahr, who speaks five languages fluently, are anxious to offer help and advice when needed. So are the dive guides: Cedric Angela, Rudy Davelaar, and Naro Wicho Thode. Serlin, the dry humor, clown prince of Habitat, sets a tone of fun and relaxation that guides and guests are quick to emulate. It begins on the required warm-up dive in front of Habitat.

From *La Machaca*, a small shipwreck in 35 feet of water, the reef slopes to 120 feet where garden eels do their now-you-see-me, now-you-don't game in the sand. To the north, on the ascent, mountains of brain and star coral mesh into one grand spectacle, teeming with yellowtail snappers, blue chromis and creole wrasses. Swimming a little farther north you approach the Cliff, a vertical reef wall that begins at 30 feet and drops to 60 feet. Two tarpon, over four feet long, with scales like silver dollars, guard their territory here, accompanied by lizardfish, royal grammas and the ubiquitous yellowtail snappers. The vertical wall of the Cliff is covered with sponges, sheet corals, gorgonians and black coral, all in 30-60 feet.

Bonaire lists 44 major dive sites and

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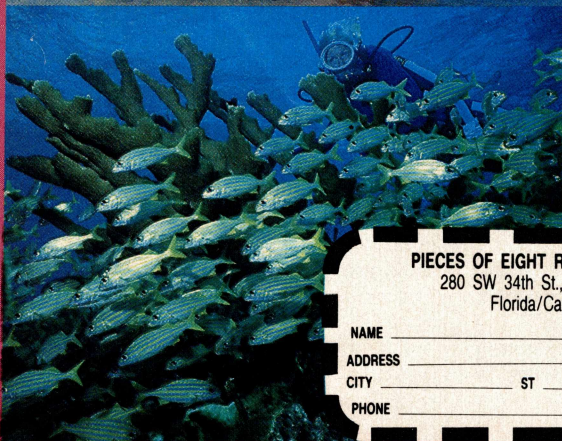
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half of them are easily accessible from Habitat, all 10 to 20 minute boat rides. Klein Bonaire, the small island that is almost a Siamese twin to the main island, has 17 sites surrounding it, most of them neighboring Habitat. One is called Just a Nice Dive, another is Nearest Point, while others include: Ebo Reef, No Name Reef, Sampler, Something Special, Knife, Jerry's Jam, Valerie's Hill, Twixt, Forest, South Bay and Carl's Hill. The latter, named for Carl Roessler, is one of Bonaire's best dive sites. On the northeast corner of Klein Bonaire, Carl's Hill starts in 10 feet and drops 170 feet. Its popularity is enhanced by a 60 foot high, horse-shoe-shaped coral outcrop that forms a wall with coral and sponges sticking straight out from it. It looks like part of the Grand Canyon in miniature as the rest of the reef tumbles down to an azure blue, deep water valley. Bright green finger sponges, purple tube sponges, black coral that resembles Christmas trees and red star corals appear like mythical Greek gorgons reaching out to passing divers. Curious tiger groupers, working the slope for a handout, weave between seaplumes and pillar coral. A filefish, flat like a pancake, chases a school of damselfish while a spotted coney drops beneath a massive head of brain coral. Janet Thibault pulls a can of sliced hot dogs from a pocket in her BC and conjures a feeding frenzy. Rock beauties, royal grammas, mutton snapper and margates manage a taste before the robber barons of the reef move in. Over 20 voracious yellowtails, like cowboys in full gallop, drive



photo/courtesy Don Stewart

the others helter skelter and empty the food coffer hastily. Carl's Hill is exciting, but so are the rest of the dive sites, each with its own distinctive feature.

One thing that isn't complex is life at Habitat. If you're expecting fancy treatment, constant catering and regimentation, Habitat is not for you. If you want something informal, relaxed and homey, you'll fit right in. Bob Bickford, from St. Petersburg, Florida, originally planned to stay at Habitat for six days and remained three weeks.

Habitat, built into the side of a coral outcrop, has 19 cottages that will accommodate up to 51 guests. Each cottage has two bedrooms, a bath and a kitchen. In addition, there are economy rooms,

Cayman Islands

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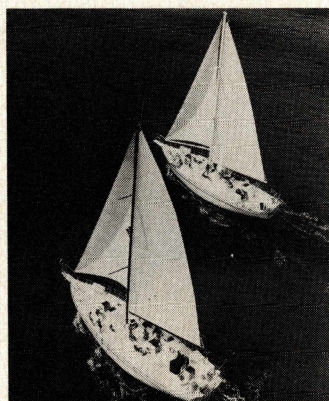
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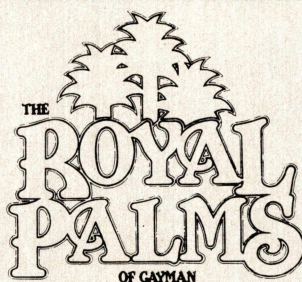
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CAPTAIN DON'S

both single and double. An open air restaurant, perched on a bluff, overlooks the harbor where the water is so clear you can watch the fish cruise in for a free meal of Habitat leftovers. The dive locker has 100 steel tanks, three Bauer K-15 compressors and plenty of weightbelts and additional equipment if needed. There are three, 26 foot, Bristol Blue Water, twin-pontoon flattops and one, 31 foot, high speed monohull. Boats leave the dock at 9:00 am and 2:00 pm, give or take 20 minutes, and best of all, divers are allowed to grab a tank and go offshore 24 hours a day. Individual and buddy responsibility is required as you log your own time.

Three major gateways lead to Bonaire. American Airlines flies New York to Curaçao and ALM, the Antilles carrier, goes on to Bonaire. For mid-Atlantic divers there is a new, weekly charter from Baltimore and Philadelphia to Bonaire. Sponsored by ALM and The Travel Committee, the newly chartered DC9-Super 80 departs on Saturdays and features fast, convenient and low cost service to Bonaire. Miami is the major gateway to Bonaire via ALM, in conjunction with a variety of major airlines, and allows divers from most cities in the U.S. to fly "through" Miami at a reduced fare.

For more information on Captain Don's Habitat, please contact: Frank Fennell, Habitat, P.O. Box 237, Waitsfield, VT 05673; (802) 496-5067.

TREASURE CAY

The Dive Centre at Treasure Cay's marina on Abaco in the Bahamas is operated by UNEXSO, the Underwater Explorers Society. The full service Dive Centre provides complete scuba instruction, equipment rental, expert guides, full certification, day and night dives, and even a bit of underwater entertainment for both novices and experienced divers. Dive Centre manager Joel Pratt adds an extra dimension to trips when he leads divers to a favorite haunt of moray eels where his "pet," affectionately named Pickles, amuses the group by playing tag.

Treasure Cay offers special four day/three night Treasure Divers Scuba packages including accommodations; introductory scuba lesson or one extra dive for experienced divers; open water coral reef scuba trip including all equipment; complimentary golf, daytime tennis, snorkeling, Sunfish and Sailfish sailing, chaise lounges and towels at the beach and five swimming pools.

The Treasure Divers Scuba package can be a first step toward membership in the Bahamas Diving Association, which has initiated a new diving awards program. The program documents diving accomplishments and helps members plan

unusual dives such as wreck, wall, blue hole, night and photographic dives. Frequent divers visiting a variety of destinations earn awards of up to 14 days of free diving, resort accommodations, meals and air travel in the Bahamas.

Bahamasair, Air Florida, Trans Air and Aero Coach have regularly scheduled flights to Treasure Cay's International Airport, which has convenient customs facilities, immigration office, fuel station and facilities for private planes. Those bringing their own boats to the island may dock at the resort's 90 slip marina. 🌿

BERMUDA DIVING ASSOC.

An association of skin and scuba diving operators has recently been formed in Bermuda. This group is known as the Bermuda Diving Association.

The primary functions of the association will be to upgrade and standardize dive boat safety procedures, ensure instructional quality in the resort and certification courses and institute positive action in the area of conservation and preservation of the delicate ecosystems on Bermuda's wreck and reef sites.

Applications have been made for permission to place permanent moorings at the often frequented dive sites to aid in the prevention of anchor damage, as well as to protect these sites from various forms of indiscriminate overfishing within a certain radius.

Currently, the membership in the association is comprised of the commercial skin and scuba operators and glass-bottom boat tour operators, but membership is open to anyone concerned with protection of Bermuda's wrecks and reefs.

For more information on the Bermuda Diving Association write to: BDA, P.O. Box 165, Southampton 8, Bermuda. 🌿

YEOMANS TO BLACKBEARD'S

Capt. Jody Yeomans has joined the staff of Blackbeard's Cruises in Miami Springs, FL. Yeomans, like all the captains with Blackbeard's, carries a special offshore sailing license. He is a scuba instructor certified by both NAUI and PADI and regularly conducts open water checkouts for new divers and resort courses for non-divers.

Including Yeomans, there are now five full time captains in the company ensuring that both 65 foot sailboats have at least two licensed captains aboard at all times. 🌿

ST. THOMAS PACKAGE

Aqua Adventures, Inc. of New York is offering a diving program to St. Thomas in the U.S. Virgin Islands in conjunction with the St. Thomas Diving Club. The package features four nights at the Villa Olga on shore and three nights on the live-aboard dive boat, *Mohawk II*—sailing the U.S. and British Virgin Islands. 🌿



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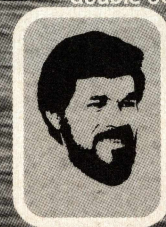
Some offer hotel rooms. We give you private bungalows that touch our clear lagoon. Some offer 2 or 3 dives a day. We give you unlimited diving along Roatan's lush coral canyons. Some have nothing more to offer. We give you three great meals each day, plus windsurfing, sailing, tennis, horseback riding, a new photo center and more. Ours is the most complete dive vacation package in the Caribbean, all for only ...

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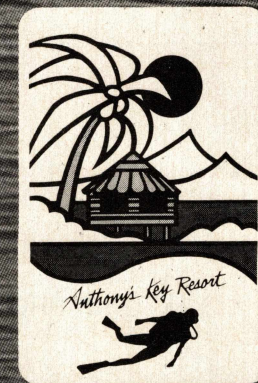
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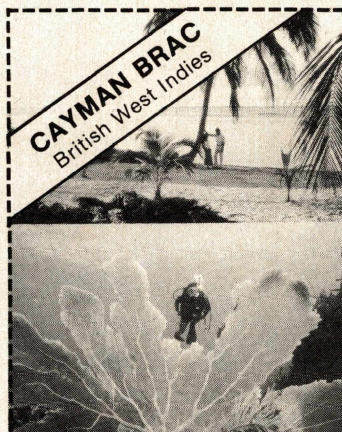


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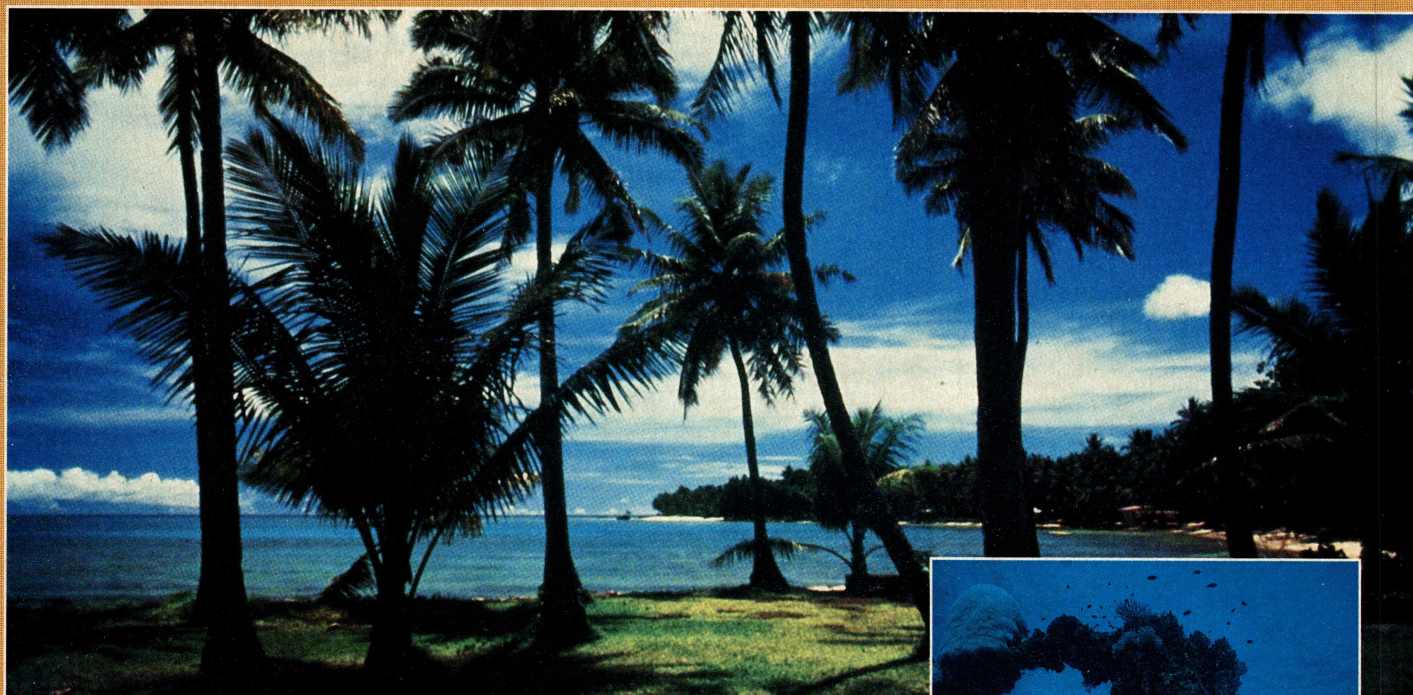
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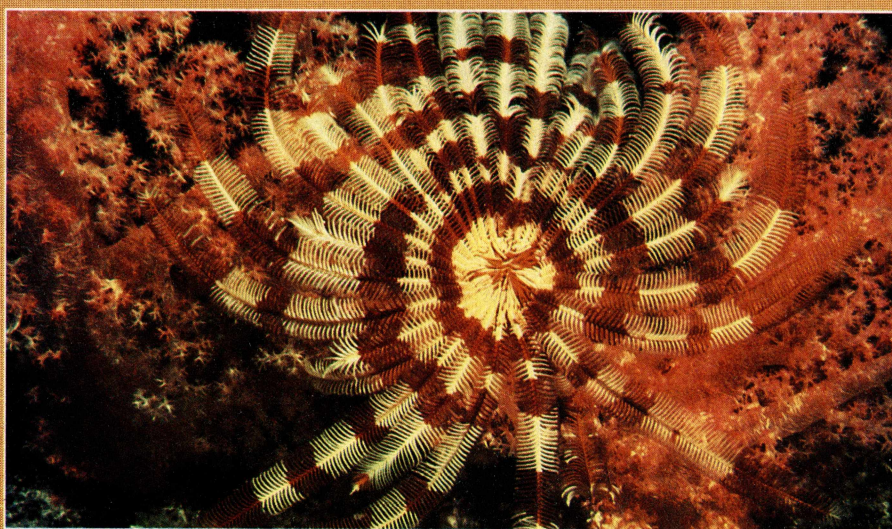
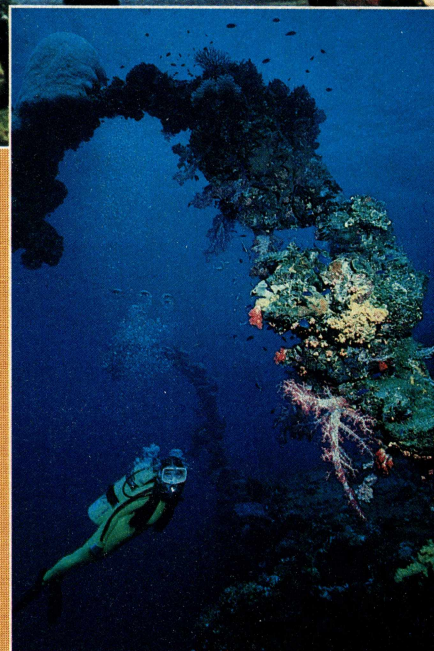
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Micronesia's Super Cruiser

Luxurious Thorfinn Cruises
Truk Lagoon To Ponape

TEXT AND PHOTOGRAPHY BY CARL ROESSLER



Top: The lush, palm-clad islands give little hint of the sunken wrecks of the Japanese Imperial Fourth Fleet which brood silently below the water's surface in Truk Lagoon. Upper right: Marine life has begun to claim the wrecks. Above: Crinoid on soft coral.

For 12 years now, since my very first visit to Truk Lagoon, I've had an elusive dream of the perfect diving vacation in Micronesia. If I were designing this dream trip, the first thing I'd get is a big, comfortable boat to function as a floating hotel. I'd want her to be sumptuous as well as seaworthy, for what I'm dreaming about is a 500 mile U/W adventure.

I'd start by boarding my great floating hotel at Truk Lagoon, where for the first few days I'd enjoy unlimited sensational diving on the vast sunken wrecks. Here, where the supply ships of the Japanese Imperial Fourth Fleet lie devastated, I'd finally be able to dive my fill. I'd have dawn dives, night dives, dives whenever I wanted them.

After this gourmet feast of wrecks, I'd up anchor and head out of Truk Lagoon, eastward toward Ponape.

Ah, but I wouldn't go directly to Ponape; instead, I'd explore the absolutely un-

discovered reefs along the way. There are the Mortlock Islands, Oroluk Atoll and Pakin Atoll, scattered like lost aquamarine jewels across an indigo sea.

When you fly over Oroluk or Pakin atolls, you see that characteristic ring that denotes coral growing up around a sunken mountain peak. What is most exciting is that these atoll reefs fall away to thousand fathom depths on all sides. The waters gently lapping the outer perimeter of the ring are crystal clear and filled with marine life.

Best of all, there are no hotels, no day-boats full of divers. We would have these reefs all to ourselves. Many have never been dived, ever.

After several days of exploring these untouched coral gardens, I'd top off the entire expedition with a couple of days of diving and land exploration on Ponape. There we could experience the Kaprohi Waterfall and the ancient ruin of Nan Madol, as well as the fabled diving of Kepura and Lone Tree.

I'd make the trip two weeks long so

anyone could fit it into their vacation. And, I'd price it within the reach of a broad spectrum of divers and dive groups.

Well, divers, that dream has indeed come true. Beginning with a Christmas trip, the 170 foot luxury dive cruiser *Thorfinn* will make five dream dive trips from Truk Lagoon to Ponape.

Thorfinn is a magnificent ship for dive cruises, with a sumptuous saloon, spacious and comfortable dining, spotlessly well-kept private double cabins throughout and superb food. She is completely equipped for divers, with an immense platform along her port side which can handle an entire group simultaneously. Her five chase boats can even accommodate mixed groups of divers and snorkelers, or take some people to shore while others dive.

See & Sea Travel of San Francisco is the general agent for the *Thorfinn* expeditions. See & Sea will have its own groups, such as a gala Christmas special with Jessica and myself as hosts. Other groups of ten or more are scheduled on

trips from Christmas through April, the prime weather and diving time in Truk.

Thorfinn will do all of her traveling at night. When we leave Truk, we'll simply wake up next morning at the Mortlocks.

The *piece de resistance* of these high adventure cruises will most certainly be the stupendous walls and shallow coral gardens of Oroluk and Pakin atolls. These remote, unexplored reefs are reputed to have the finest deepsea fishing in the world, not to mention the fabulous diving. On an incoming tide, underwater visibility on the outer walls can exceed 200 feet.

Here is your chance to share my dream. Check with your local dive store to see if they have put a group together with See & Sea. If they haven't call See & Sea Travel at (800) DIV-EXPT. In California, call (415) 771-0077. Or, drop a line to us at 680 Beach Street, #340, San Francisco, California 94109. You'll be glad you did.

Don't let anyone keep you from sharing Micronesia's greatest dream....



The 170 foot luxury cruiser *Thorfinn* is fully equipped for divers and has a large saloon and dining area. She will carry divers from Truk Lagoon to Ponape, including visits to the Mortlock Islands, Oroluk Atoll and Pakin Atoll. The vessel will travel at night to allow divers maximum daylight down time to explore the magnificent sites of this area.

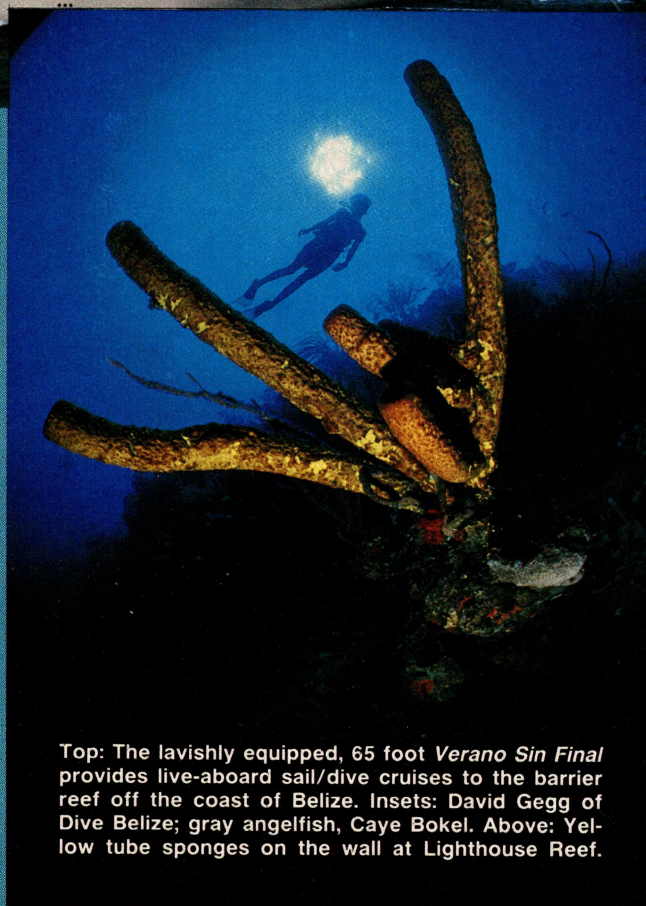


Sail Belize

TEXT AND PHOTOGRAPHY BY STEPHEN FRINK

Sometimes the surprises in life are nice ones. I'd heard that the waters surrounding Belize offered exceptional diving, in fact some of the best in the Caribbean, but beyond this I had no clear expectations preceding our dive trip aboard the 65 foot Irwin sail yacht *Verano Sin Final* (Summer Without End). Fortunately, the service and quality of accommodation aboard the vessel matched the excellence of the diving and together provided a unique vacation experience.

Belize, formerly known as British Honduras, has many of the ingredients necessary for a flourishing Caribbean dive destination. The TACA flight from Miami is brief, only one hour, 45 minutes, and serves Belize City daily. Service is also available from Houston, New Orleans and Los Angeles, making Belize one of the more accessible areas of the Caribbean. The strife and political turmoil, so characteristic of some areas of Central America, are totally absent in Belize. There is no overt military presence and the people are quite friendly. Of course, politics



Top: The lavishly equipped, 65 foot *Verano Sin Final* provides live-aboard sail/dive cruises to the barrier reef off the coast of Belize. Insets: David Gegg of Dive Belize; gray angelfish, Caye Bokel. Above: Yellow tube sponges on the wall at Lighthouse Reef.

and to become a low priority when sailing these clear, virgin waters from dive site to dive site aboard a luxurious, \$500,000 sailboat. Good airlines with reasonable fares and friendly natives are important, but the final ingredient that will ultimately establish Belize as a major Caribbean dive destination is its excellent diving.

Belize is not an island, but a portion of the Central American mainland. The diving directly offshore is hardly spectacular owing to the runoff from the rivers. The best diving is farther out, and the world's second largest barrier reef is easily accessible by boat. There are 185 miles of very impressive shallow reefs and drop-offs at the barrier reef. In addition there are three major atolls with at least a 50 mile perimeter each. Around each atoll there are even more shallow reefs and vertical walls for a total of more than 335 miles of reefline that is virtually untouched. There are incredibly scenic islands, secluded anchorages and magnificent diving. All of these are ideal for the live-aboard dive boat.

David Gegg of Sail Belize has recognized the necessity for the live-aboard dive vessel and created Dive Belize to specifically service that market. Born and raised in Belize, David obtained his business degree in the United States. Upon graduation he returned to his native land and established a sail and dive charter business. Sail Belize is in the midst of major expansion, but in its current evolution includes its own island, Moho Caye, just offshore Belize City. Moho Caye offers fuel, water, boat dockage, dive gear rental and portable air compressors

specified by title. While the hull is fiberglass, with all the advantages and low maintenance which can be expected of this material, both the exterior and interior are richly adorned with teak. The main saloon and cabins are particularly opulent, but at the same time utilitarian. You wouldn't necessarily want to lounge about below decks in a wet bathing suit, but the *Verano Sin Final* has the feel of a boat meant to be lived in. Each of her four private staterooms feature individually controlled air conditioning, stereo and a full bath with head and hot/cold shower. For those evenings when a cooling sea breeze is preferable to air conditioning, each stateroom also features a hinged skylight that provides superb ventilation. The main saloon is the entertainment center for the boat and includes a large table for drinks and meals, video camera and tape deck, stereo and bar.

The *Verano Sin Final* is also lavishly equipped with electronics, including satellite navigation, VHF and single side band radio, and autopilot. Additional amenities include icemaker, on deck freshwater rinse (heated), boardsailers and two chase boats, one fiberglass and one inflatable. Hidden below deck is a Mako K-7 compressor with 3,000 psi service to accommodate the aluminum 80 cubic foot tanks used by Dive Belize. Ours was the inaugural dive charter aboard this vessel, but future projected improvements include a back-up air compressor and built-in tank racks aft.

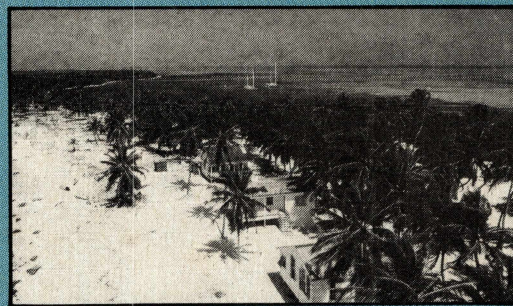
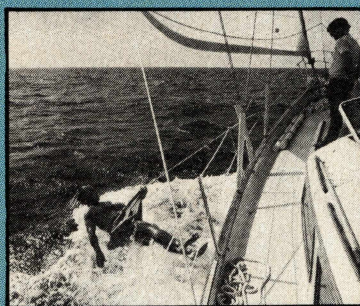
Diving from a sailboat is not the same as diving from a power boat, but the adjustment is not major. The entry is a giant-

turns to in a set itinerary. Rather, there are areas where the diving is known to be consistently fine and each dive involves a bit of discovery. For example, our first dive was near Caye Bokel in the Turneffe Island chain. We anchored at the edge of the wall and dropped in. We were surrounded immediately by a school of inquisitive Atlantic spadefish. The sheer quantity and variety of other species of fish was numbing. There were eagle rays swimming by in formation, a sea turtle, schools of porkfish and Bermuda chub, a green moray eel, and ample selection of grouper and angelfish. We did not see this massive concentration of fish on every dive, but it seemed there were generally more fish in Belize than in some other Caribbean areas. As fantastic as the marine life was on this dive, the sponge and gorgonians were even more awesome. The wall face was covered with huge clumps of gorgonians with an abundance of encrusting sponges of vibrant color.

In the same area there is a shallow wreck with a beautiful upright anchor in the turtle grass. In fact, there must be literally hundreds of wrecks throughout these waters and they will be excellent dives as they are discovered. In the lee of the Turneffe Island group there is ample diving in the 30 to 60 foot range with good high profile coral, barrel and tube sponges, and fine marine life. General visibility ranges from 80 to 150 feet with water temperature from 76 to 84°F.

Our cruise did not include Glovers Reef to the south or Ambergris Caye to the north, but both areas reputedly offer superior diving. We did spend a few days

Sail and Dive Beyond the World's Second Largest Barrier Reef



to serve the fleet of bareboat charter vessels. There are 11 sailboats in the 31 to 46 foot range in the bareboat program at Moho Caye and they may be rented with or without a local skipper.

For the less adventurous dive/boating enthusiast (like me), the crewed charter is certain to be more appropriate. There are two 52 foot Irwins and one 65 foot Irwin available for charter at this writing, but by the end of 1984 Sail Belize projects five 52 and two 65 foot Irwins. Taking the *Verano Sin Final* as an example, these are truly glorious vessels.


The crew includes a captain, cook and divemaster, although each crew member performs many functions besides those

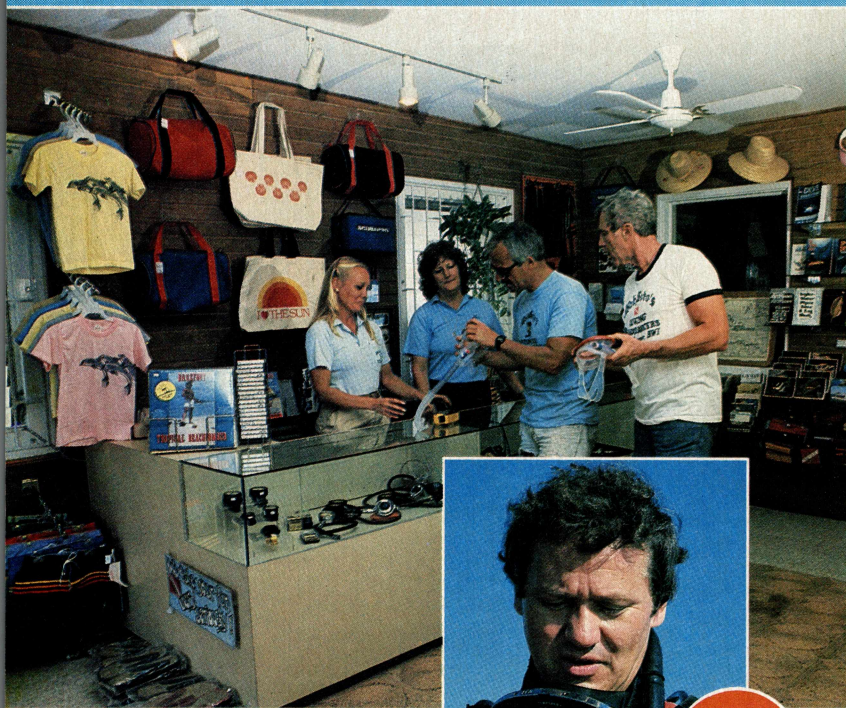
stride from mid-ship with about six feet of freeboard. The exit requires greater agility since the platform is not permanently affixed to the hull. Typically, one of the crew will take the cameras, tank and fins and assist the diver to the platform while another member of the crew will help the diver climb aboard. Under normal conditions this system works fine, but in heavy seas it would be awkward.

Earlier I alluded to the incredible amount of diving available in Belize. I logged ten dives aboard the *Verano Sin Final* and might have experienced a fraction of one percent of all there is to see. And, what I did see was impressive.

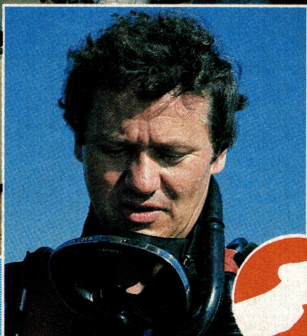
These are not named reefs the crew re-

around Lighthouse Reef diving the magnificent drop-offs and the famous Blue Hole. This latter is interesting as a geographic phenomenon, and there is a certain fascination in diving to see the stalactites hanging from what was once the roof of a subterranean cavern.

The *Verano Sin Final* is able to motor at nearly nine knots so we lost no dive time owing to contrary winds. When the winds are favorable though, the sailing experience aboard this vessel is particularly exciting. For further information or reservations, please contact Sail/Dive Belize, P.O. Box 13023, St. Petersburg, FL 33706 or phone toll free (800) 237-6339 or (813) 367-1952. 



The Bob Soto's Scuba Centre is a dive boutique and training center. Right: Ron Kipp, president of Bob Soto's Diving Ltd.



THE KIPP CONNECTION

A Dive Plan For Everyone

TEXT AND PHOTOGRAPHY
BY GERI MURPHY

When Ron Kipp first arrived on Grand Cayman as the new owner of Bob Soto's Diving Ltd., local islanders were a little dubious of his ability to survive. Here was a tall, untanned, business executive with a cherubic smile of innocence. How would an ex-IBM sales executive cope with the frontier existence of Caribbean island life?

What they didn't know about was Kipp's deep commitment and devotion to diving, and his unbelievable drive for success. Here was a man who was an active NAUI instructor, a leader in his own local diving community and an enthusiastic part-time leader of Caribbean dive trips.

Yet the question lingered, could a successful business executive from the North make it as a dive operator in the tropics? The two lifestyles are at opposite ends of the social spectrum. While many have attempted the transition, few have ever succeeded.

Kipp's first encounter with dive boat operation did not exactly instill a lot of confidence in the minds of his peers. Shortly after his arrival and official take-over of the business, Kipp was advised that a group of divers wanted to make a night dive on the *Balboa* wreck. Unfortunately, it was the same night all the dive boat skippers were having a bon voyage party for the former owner, Bob Soto. Undaunted by this problem, Kipp agreed to conduct the night dive and run the boat himself. After all, it was his business, his boat, and he had been diving (during the day) on the *Balboa* many times. The task did not appear difficult since the wreck lies in the center of George Town Harbour, just a few hundred yards from Bob Soto's Diving Headquarters and boat pier. It should have been a cinch, but

(Continued on Page 86)



The Cayman Islander is a diver's hotel available at attractive prices. Although it is off the beach it has all the island resort amenities including spacious pool and sundeck areas.

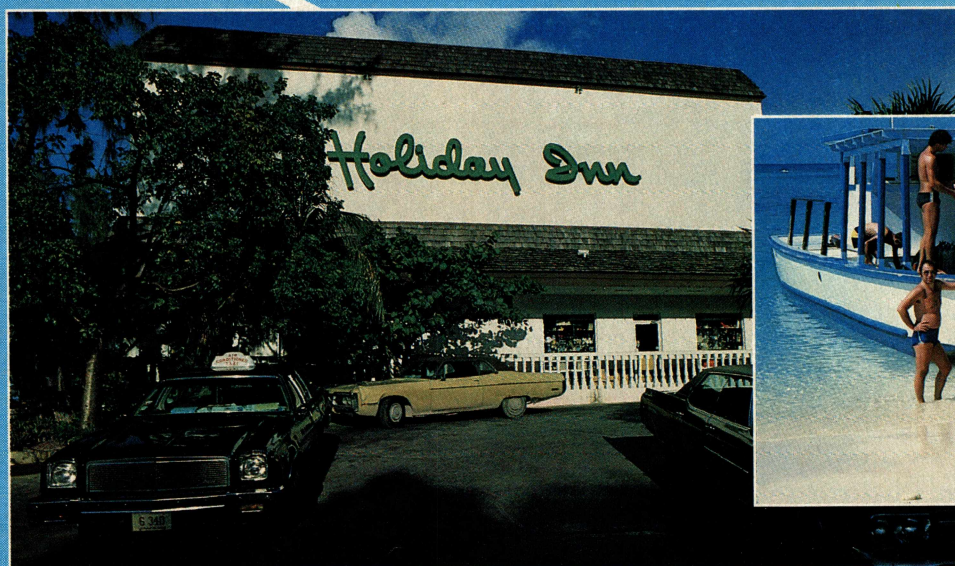


Weekly cruise ship visits provide passengers with the opportunity to learn to dive at the Scuba Centre.

London House is a condominium style accommodation on Seven Mile Beach offering ultimate privacy.



Holiday Inn is Cayman's biggest and busiest hotel—on Seven Mile Beach, with a dive boat at your doorstep.



Port Largo Resort

Pennekamp Park's Luxury Dive Lodge

TEXT AND PHOTOGRAPHY
BY STEPHEN FRINK

John Pennekamp Coral Reef State Park has long enjoyed a reputation as America's premier dive destination, and given the number of divers visiting annually, it is little wonder that a wide range of facilities have developed to accommodate them. Port Largo Resort realized from inception that the traveling diver was its most important market and created an impressive complex targeted specifically to the watersports enthusiast.

In explaining the principal concepts of the Port Largo Resort, developers Stuart and Scott Marr seemed to stress the quality and convenience factors. Situated in the heart of Key Largo, Port Largo Resort is close to shopping and the vehicular artery of the Florida Keys, U.S. 1, yet it remains separate and exclusively aloof. The property sits on a deep water canal with quick, easy access to the Atlantic Ocean and the south end of Pennekamp Park. There are tennis courts, two swimming pools, a waterfront lounge with daily live entertainment, spas, sportfishing, bareboat and crewed sail charters, boat dockage, boat ramp and of course complete facilities for the scuba diver.

One of Key Largo's finest dive operations, Ocean Divers, maintains their marina facility directly adjacent to Port Largo Resort. They offer daily reef excursions to Pennekamp Park, dive equipment rental and retail, air fills, U/W camera and strobe rentals and sales, scuba instruction and resort courses, and daily E-6 processing. This is especially convenient because once the diver checks into Port Largo Resort virtually all necessary activi-



Schooling porkfish and grunts at French Reef in John Pennekamp Coral Reef State Park.

ties are only steps away from the villas.

The quality factor is evident in the villas; 28 two bedroom, two bath suites and two, one bedroom, one bath suites. These are luxuriously decorated and furnished units intended for short-term rental. There is central air conditioning, wall-to-wall carpeting, color cable TV, wrap-around cedar balconies, fully equipped kitchens including utensils and appliances, towels, hairdryer, even a backgammon set. These are intended as vacation "home-away-from-homes" and are quite complete.

The entire complex is beautifully landscaped with tropical foliage and the overall appearance suggests that Port Largo Resort should be expensive. This is not necessarily the case. For a couple, the room cost could be more than it would for other types of accommodations. But, Port Largo offers more space and the luxury would be greater, and of course there could be savings by preparing meals in instead of eating out. The real pricing advantage to these villas becomes apparent with groups of four or more where the prices actually fall below many of the



The Port Largo Resort is close to shopping and the Overseas Highway, and sits right on the deep water canal with easy ocean access.



The suites are luxuriously decorated and fully furnished.



Port Largo guests at Coconuts Lounge, on the waterfront.

Key Largo motels. Even greater savings may be realized when booking a dive/lodging package as compared to buying either service individually. A telephone call to the toll free Port Largo Resort reservation desk should clarify any specific pricing questions.

The consistent occupancy enjoyed by the resort over the past two years has proven the validity of the Marr's concept and plans are underway for greater expansion. Phase II will include 76 new units; 38 will be efficiency suites and 38 will be one bedroom units. This will be a

four story complex and every room will feature a waterfront view. A glass enclosed elevator will transport guests and dive gear between floors. Plans include a restaurant and boutique in keeping with the self-contained resort orientation.

The typical Port Largo Resort/Ocean Divers package includes lodging, two-location boat dives daily, tanks, weights and backpacks. The packages are most advantageous with at least a three day minimum stay, but of course daily reservations are also accepted. Weekends bring substantial traffic to the Keys from

the Miami and Fort Lauderdale areas, and the pace becomes a bit more hectic. The most attractive packages from both a price and service perspective will occur mid-week.

For more complete information regarding watersports in the Upper Keys and Pennekamp Park, please refer to SKIN DIVER's Florida Keys Special Section (July 1984). For further information or reservations at Port Largo Resort contact P.O. Box 1050, Key Largo, FL 33037, or phone toll free (800) 451-DIVE. Florida residents may dial (305) 451-4107. 🐠

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Photo/Stephen Frink

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DEPARTS WEEKLY FROM W. PALM BCH.

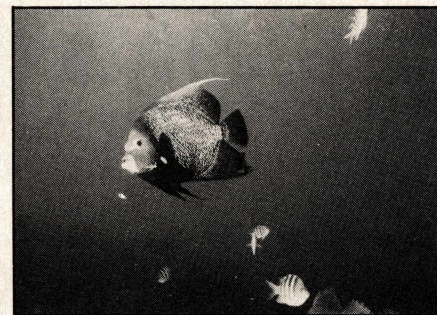
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NAUI DIVES CAYMAN/IQ15

NAUI Dives Cayman and IQ15 will take place October 13-21 on Grand Cayman Island. The event is open to scuba instructors, assistant instructors and dive-masters (or equivalent) from any agency, plus their spouses or guests.

Diving leaders can earn continuing ed-



ucation credits and a wide variety of topics will be covered including teaching underwater photography, selling dive trips, equipment maintenance, rescue, wreck and night diving and marine life identification. The Divers Alert Network will offer its diving medicine course for instructors.

There will be special events including a beach party, and guests can also attend the NAUI Diving Association meeting and awards presentation banquet.

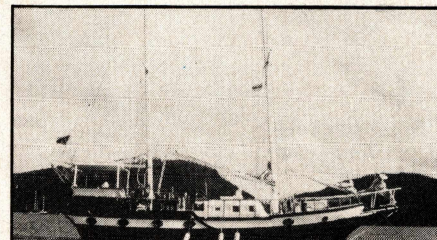
A NAUI instructor training course will be held before the conference on October 5-13 and a NAUI crossover course October 11-13. The NAUI membership meeting will be held October 16 and the annual Awards Ceremony, October 17. Following the conference there will be a three day trip to either Little Cayman or Cayman Brac.

Special discount rates on air fare, accommodations and diving are available.

For information on the conference call Ron or Sue Bangasser at (714) 794-4495. For travel information call Airtour Universal Travel at (800) 327-8223. In Florida call (800) 432-8894.

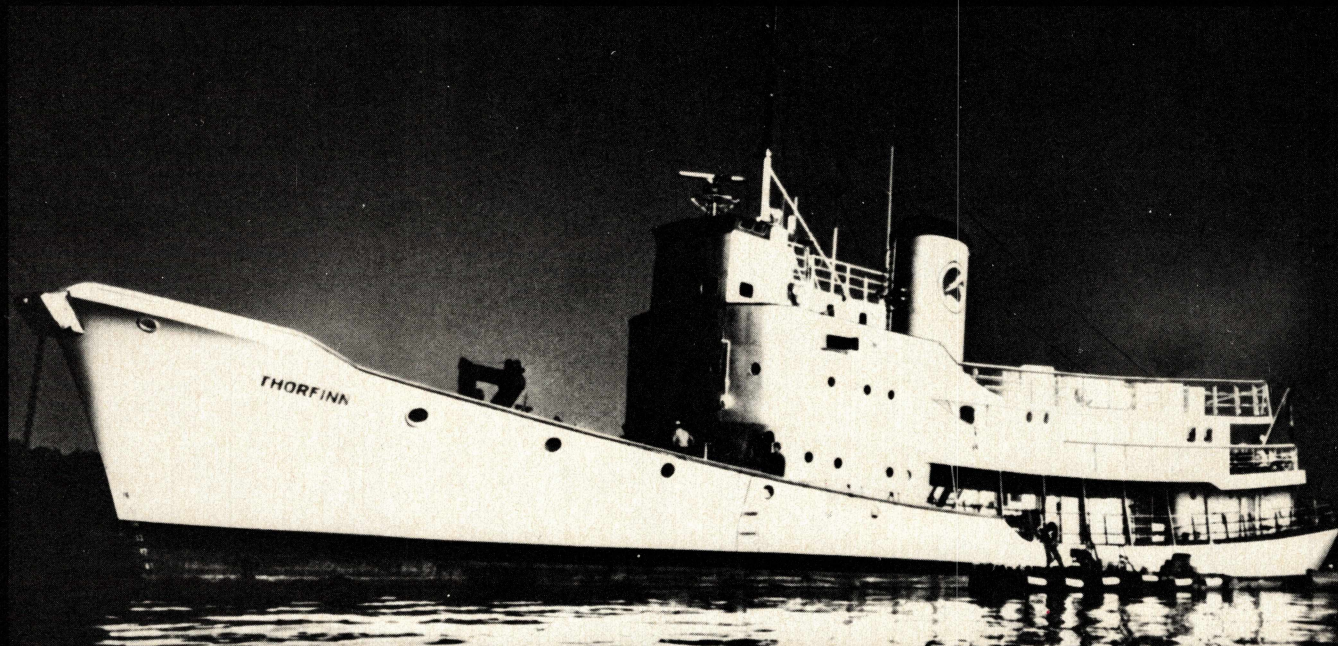
SEE & SEA TO THAILAND

See & Sea Travel is offering a cruise to Thailand November 23 - December 7.



Carl and Jessica Roessler will host a program of touring and dining in Bangkok; then the group will enjoy unlimited diving in the remote Similan Islands aboard the *Andaman Explorer*.

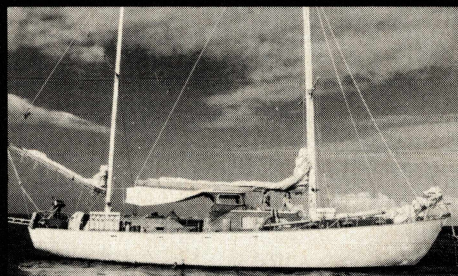
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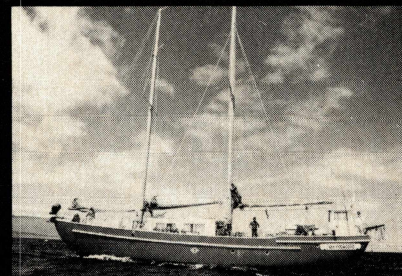
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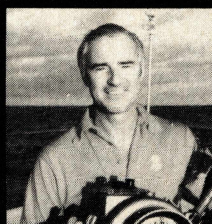
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The 435 foot *Lowrance* is towed to her final resting place.



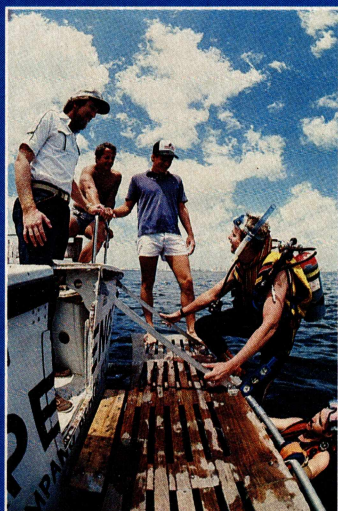
TEXT AND PHOTOGRAPHY BY MARK M. LAWRENCE

Floridians have always known about the advantages of Gold Coast diving. Recent publicity has concentrated only on the reef systems. Broward County also has great wrecks. According to a survey map done by James Dean, more than 30 wrecks lie between Pompano Beach-Fort Lauderdale. The oldest of these vessels went down several hundred years ago; the youngest, just a few months ago. Many of these ships now create spectacular dives.

Traveling to the Fort Lauderdale area is easy. Fort Lauderdale International Airport has frequent flights from major North American cities. For those who prefer to drive, Florida's Turnpike and Interstate 95 provide access to the diving area. Serving both the Fort Lauderdale and Pompano Beach communities, operations such as Pro Dive Charters offer complete diving packages. Their large dive boats, the 42 foot *Pro Diver* and 36 foot *Experience* are the region's charter vessels. Broward County has wrecks resting in many different depths. Depending on the diver's certification level and logbook, visitors can sign up for a variety of tours. Organizations such as Pro Dive run wreck trips on a regular basis.

Since the late 60s Florida's Gold Coast has been the location of many successful artificial reef programs. Broward Artificial Reef, Inc. created many structures that benefit not only the diving community but also other large user groups such as sport fishermen and charter boat operators. The Broward County Environmental Control Board (BCECB) continues such work today. Coordinator for the county, Steve Somerville, plans to add to the existing 18 artificial reefs. As with most governmental agencies, Somerville's department must perform miracles with very limited funds. In his opinion the evaluation of the total benefit of artificial reefs to both the environment and the local economy merits an independent study. Government sanctioned studies often form the basis for determining the amount of future funding. The author hopes such a project is undertaken

Top right: A diver explores a room on the *Lowrance*.
Above: Large amberjack cruise around the *Lowrance*.
Right: Divers climb aboard the *Experience*. Of the five Gold Coast wrecks that especially appeal to divers, four were sunk intentionally to provide artificial reefs.



soon to demonstrate the worthiness of Somerville's program.

Of the five local wrecks that especially appeal to divers, four were sunk intentionally. Mystery and controversy still surround the origin of the oldest. This ship sank accidentally. Most divers know the broken hull and sentry-like ribs that rest on the Pompano Drop-off as the *Cumberland*. A cement freighter, the *Cumberland* sank in 1920. However, research on the vessel and the discovery of coal on her indicates she is really the *Copenhagen*, sunk in 1899. What about the bullets occasionally found in the sand around the hull? Somerville's coworker, Steve Higgins said, "The 50 caliber shells are probably from the period during which the Navy used the *Copenhagen* as a practice target." Others believe that yet another wreck lies beneath the sand—an ammunition barge—which gives up evidence only after heavy storms. Whatever the history may actually be, the site remains a fascinating drift dive. The trip south from the Hillsboro Inlet takes only 20 minutes. With the aid of the Gulf Stream current, the diver can effortlessly take in the whole wreck. Schools of fish glide in the shadows. During lobster season, divers enjoy searching among the twisted plates for dinner. Sleeping nurse sharks often rest here. After traveling over the wreck, the Pompano Drop-off provides more entertainment. The east facing vertical ledge drops from 12 to 30 feet. Caves and ledges gradually give way to isolated coral blocks. Wreck and reef combine to create a pleasant dive.


Moving out from 30 feet of water to 70, the diver encounters four barges. Just north of the Port Everglades Inlet, these are easy to reach. Fortunately, the largest barge is the least dam-

aged; it is 100 feet long. Barracuda hang in midwater. Blue parrotfish seek shelter here. As with the majority of diving in these waters, the easiest way to view these wrecks is by drift diving. A dive team of two to six people can control where and how long they choose to stop. After tying off the drift line to the hull, any one of a half-dozen entry points become available. It's best to have an experienced guide when penetrating such wrecks; Pro Dive Charters can arrange for a qualified dive-master. The low ceiling rooms of the barge are generally wide. In the undisturbed interior much sediment accumulates. Backing a model or patient dive buddy with the crisscrossing support beams can produce some interesting photographs. Many ladders and hatches also form good backgrounds. For those who prefer less confined spaces, a large hole permits ample light and easy access to one room. An amazing diversity of sea life finds this artificial reef attractive. Even large turtles may be found asleep under the bow. Close inspection of the numerous holes and crevices may reveal another set of eyes peering out;

octopus prefer small dark recesses. At these moderate depths, the average diver runs low on air before running out of time. A trip to the houseboat is a must. Sunk ten years ago in 90 feet of water, this ship has since acquired a luxuriant covering. Deep water gorgonians dot the sides and fill in the balcony railings. In addition to the usual complement of barracuda, schools of silver baitfish cling to the hull. Fat hogfish roam the decks. The ship is intact. One can swim from bow to stern without exiting. When the furnishings were removed prior to its sinking, interesting details like the galley stove and cabinets were left aboard the boat for the divers and fish. Photographers can find picture possibilities for everything from macro tubes to ultra wide angle housings. Close-up enthusiasts enjoy shooting the many types of blennies along with several different kinds of corals that have attached themselves to the steel hull. Seemingly determined to have their best side photographed, barracuda turn to give the camera a three-quarter view. Not only is this site used for advanced photography classes but also for wreck and deep diving certification training.

Out beyond the houseboat rests the tugboat *Trio Bravo*. She is 142 feet long and lies in 130 feet of water. This wreck is definitely only for the very experienced diver. Sunk by a spectacular explosion that literally blew the bridge right off the hull, the tug is otherwise in good shape. Sunk in 1982, the *Trio Bravo* already shows new life. Almeco jacks greet the visitor. With her bow facing into the prevailing north current, she sets to the southwest. Baitfish and grunts now reside on the upper decks. When entering the forward cabin area, divers often meet jacks that reluctantly give up their new found home. Stairways that lead to nowhere and doorways that open to empty space help create striking images. On the last dive a portly old hogsnapper swam lazily around the photographer's feet. Bottom time runs out long before one gets tired of this intriguing wreck.

Originally christened the *Mazon*, the newest Gold Coast wreck has been renamed the *Lowrance* in appreciation of that corporation's contribution to the obtaining and placement of the 435 foot freighter. Her final voyage caused great celebrations. One of the largest local gatherings of power vessels on record formed to usher the *Lowrance* to her last stop. Ships of every description took part, including Goodyear's airship, *Enterprise*. The U.S. Navy SEAL Team did an excellent job sinking her. She now sits upright. Depths on this wreck range from 120 to 210 feet. From the dive boat *Experience* it's a long descent along the anchor line to even the highest deck of the *Lowrance*. Huge amberjack rush past the diver in a dizzy display. Materializing from the deep blue gloom, the white upper decks spring into view. This ship is immense. Peering out over the stern rail, one barely makes out the sandy bottom far below. It would be impossible to cover the entire ship during one dive. On the shallow end, white beds still wait for patients in the hospital room. As the diver swims across the stern hold to midships, he finds many jacks will escort him once again. In this area the engine room makes for fantastic photographs. Such deeper rooms can become a problem, however. Air and time dwindle rapidly. All too soon the diver must head up to lengthy decompression stops. Usually, the ever present amberjacks lead the visitor back up the anchor line. Although deep, examining a vessel of this size is a real treat.

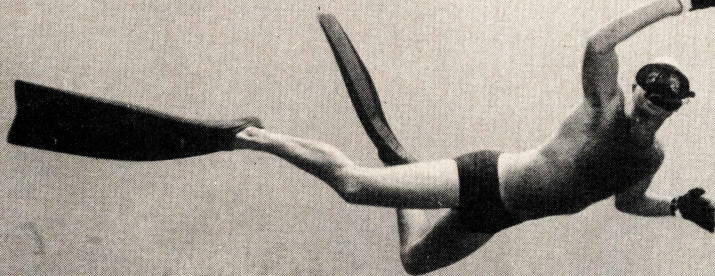
Even more ships have been designated to join the wrecks already on the bottom. With public support the Broward County Environmental Control Board's ambitious artificial reef programs will continue to create new resource areas. These projects cost the public very little, but give enjoyment to everyone who uses the sea for years. Soon the Gold Coast region will have a solid reputation not only for extensive reef systems but also for its growing collection of wrecks. No matter what the diver's skill level, from basic to professional, the Broward County area has a wreck for you. 

FLORIDA'S WRECKS

Over 30 Sunken Ships Offer Spectacular
Diving Between Pompano Beach
And Ft. Lauderdale

aged; it is 100 feet long. Barracuda hang in midwater. Blue parrotfish seek shelter here. As with the majority of diving in these waters, the easiest way to view these wrecks is by drift diving. A dive team of two to six people can control where and how long they choose to stop. After tying off the drift line to the hull, any one of a half-dozen entry points become available. It's best to have an experienced guide when penetrating such wrecks; Pro Dive Charters can arrange for a qualified dive-master. The low ceiling rooms of the barge are generally wide. In the undisturbed interior much sediment accumulates. Backing a model or patient dive buddy with the crisscrossing support beams can produce some interesting photographs. Many ladders and hatches also form good backgrounds. For those who prefer less confined spaces, a large hole permits ample light and easy access to one room. An amazing diversity of sea life finds this artificial reef attractive. Even large turtles may be found asleep under the bow. Close inspection of the numerous holes and crevices may reveal another set of eyes peering out;

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U/W HOCKEY CHAMPIONSHIPS

The first official World Championships of U/W Hockey were held recently at Chicago State University. Eight men's teams representing Australia, New Zealand, Canada, England, France, Holland, Zimbabwe and the USA were in the competition. Four teams representing Australia, New Zealand, Canada and the USA competed in the women's division. These World Championships were sanctioned by the World Underwater Federation (CMAS) and hosted by the Underwater Society of America.

During the four days and 58 games to determine the men's and women's champions, an underwater video camera recorded all the competition and spectators could watch the action live on three television sets in the stands. The pool also had U/W viewing windows where spectators could watch the competitions.

Australia placed first in the women's division, followed by New Zealand, then the USA and Canada.

In the men's division the English team took third place and the U.S. fourth. Australia claimed the men's World Championships by defeating Holland.

The 1984 World Championships of U/W Hockey were a tremendous success and it was decided to hold them every two years. The 1986 competition will be in New Zealand.

Those who wish to purchase video cassettes of any game of the World Championships, or who would like information on U/W hockey please contact: Tom Miller, 1105 Helen, Deer Park, TX 77536; (713) 476-4043.

NATIONAL SCUBA REPAIR

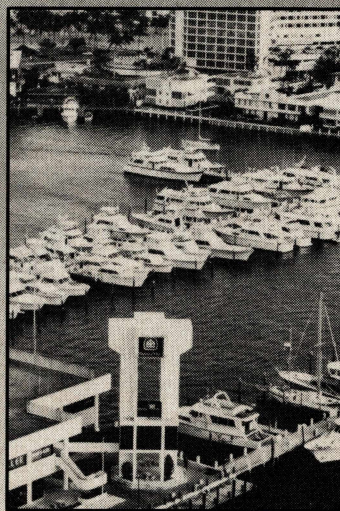
National Scuba Repair, Inc., of Huntington Beach, CA recently became exclusive customer service center and sole parts distributor for all AMF-Voit scuba equipment. Already the sole source for Healthways, Submarex and U.S. Divers two hose parts, National Scuba celebrates its tenth year in business as one of the largest independent repair facilities in the world.

Housing over 4,500 square feet of space, National Scuba provides all phases of diving equipment service including in-house hydro testing of scuba cylinders for individuals, dive shops, U.S. and foreign free-world military, federal and state agencies, schools, commercial diving companies and manufacturers.

The shop has grown from a complete repair facility to a full service pro dive shop. Open seven days a week, National Scuba retails most major brands of equipment and as a PADI Five Star Training Facility offers basic, advanced and specialty instruction.

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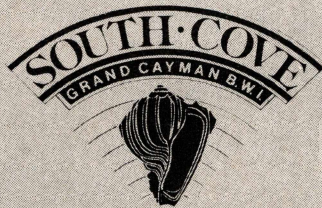
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KIPP CONNECTION

(Continued from Page 77)

that is precisely when Kipp encountered Murphy's Law: Whatever can go wrong, will go wrong.

While Bob Soto and his former boat skippers watched from the veranda of the Lobster Pot Restaurant just above the dive shop, Kipp and his guests cast off the lines and chugged out to sea. Kipp gave the order to turn right (he had not yet mastered nautical terms). The dive boat proceeded to move away from the *Balboa* wreck until someone discreetly advised him he had turned the wrong way. Reversing direction, Kipp and his passengers started searching for the wreck in earnest. Kipp had been given some shore ranges for night navigation but he was a little unsure of the bearings. Fortunately, there was a freighter an-



Oro Verde

chored in the harbor and it would serve as a good reference point for his search.

Kipp crisscrossed the harbor waters endlessly searching for signs of the *Balboa*. The guests were becoming restless and their new skipper could sense a distinct lack of confidence. Being a man of action, Kipp finally could not stand it any longer; he decided to jump into the water with snorkeling gear. He would swim ahead of the dive boat and scan the ocean floor for signs of the *Balboa*. After all, how could a 400 foot steel shipwreck suddenly vanish from the harbor floor?

Before Kipp had time to ponder this question, the second chapter of Murphy's Law took its toll. Kipp collided head-on with a large night stalking jellyfish. With eyes riveted to the ocean floor, Kipp was totally unaware of the surface obstacle and crashed into its stinging tentacles with one shoulder and arm. It was full

contact with the wallop of a karate chop. Suffering from pain and partial paralysis, Kipp retreated to the safety of his dive boat. He wasn't sure which was worse—the pain or the humiliation.

He had come to rope's end. The elusive *Balboa* had slipped from his grasp and the night dive was destined to be a sure disaster. In desperation, Kipp motored over to the freighter anchored in the harbor. He hailed the crew and offered a cash reward (\$20 was all he had) for any crew member who could direct him to the location of the *Balboa*. A crew member quickly snapped up the \$20 bill, laughed, and pointed straight down. The wreck was right under the anchored freighter!

After the night dive, Kipp returned his guests to the dock and apologized profusely. In fact, he offered them another dive on the house. To a person, the dive guests vowed they would return. It had been the most entertaining night dive of their lives.

Ron Kipp's first night dive as owner of Bob Soto's occurred in October 1980. Despite this somewhat unsteady beginning, Kipp has since won the respect and admiration of everyone on Grand Cayman. Over the past four years, he has quadrupled the business, completely renovated the company's equipment and more than doubled the facilities and staff. He started with three dive boats in need of repair and today has a fleet of seven boats which have been completely overhauled and run like new.

Kipp has come a long way in a remarkably short time, especially by island time standards. He is actively involved in the day-to-day operation of the business. Unlike the Kipp of four years ago, he can skillfully skipper any one of his boats, serve as a divemaster, teach a scuba class, sell equipment behind a counter or talk financing at the local bank.

What has made Kipp so successful in this business? He attributes much of it to his sales management training at IBM. In fact, he has applied the IBM philosophy to his business: Customer service and value are the two most important considerations. His goal is to offer good diving at good prices.

Customer satisfaction is the key to the success and growth of Bob Soto's Diving and many customers come back year after year. How is he able to keep so many divers happy in such a big operation? The secret lies in Kipp's modular approach to dive trip planning. Guests are placed in small dive groups of 5 to 10 people, each with its own divemaster or instructor. There is strong emphasis on both diver safety and personal enjoyment. The staff is continually being trained and coached by Kipp on the subject of customer service and satisfaction.

As Bob Soto's Diving has continued to grow over the past four years, Kipp has become aware of the vast difference in customer needs. Not all divers are the

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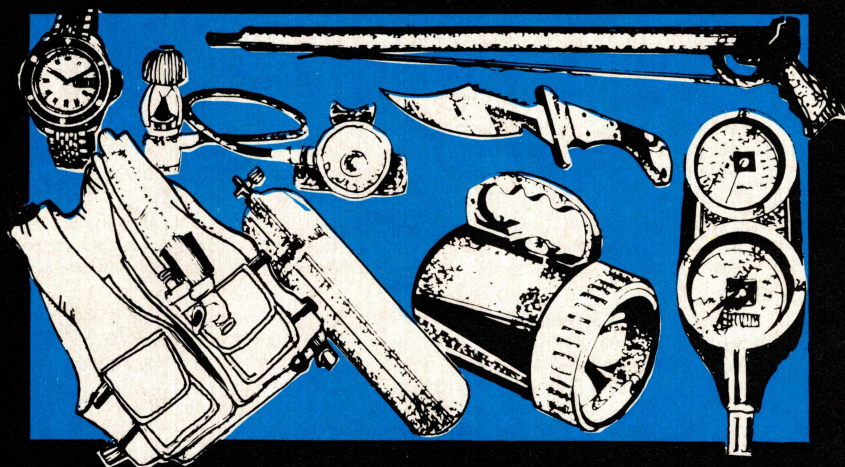


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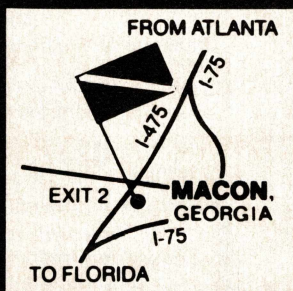


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KIPP CONNECTION

same, nor do all of them want the same kind of vacation. Kipp has responded to the market situation by developing a variety of different services, facilities and programs that fit the needs of all different types of divers. His Guarantee Dive Package with the Holiday Inn Cayman is perhaps one of the most ingenious programs put together in the last 10 years.

The Holiday Inn is Cayman's biggest and busiest hotel. It is in the center of the fabulous Seven Mile Beach, with easy access to shopping, sightseeing, sailing, sunbathing or scuba. It is an ideal beach resort for the person or family seeking an all star vacation with plenty of beach activity and night life.

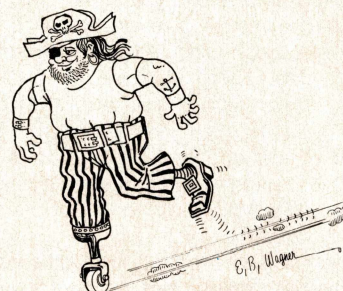
Kipp has a dive shop right on the Holiday Inn premises and within a few steps of the beach. His dive boats drive up onto the hotel beach every morning and every afternoon for convenient loading. The unusual twist to this program is that both the Holiday Inn and Kipp guarantee each booked guest that a place will be waiting for them at the hotel and on the boat. If either the hotel or dive operation fail to deliver, the guest gets a free vacation.

For those divers not interested in a beach hotel, Kipp has developed an excellent bonus dive vacation with the Cayman Islander Hotel. This is a new motel style resort located off the beach but featuring its own pool, poolside restaurant and televisions in the rooms. Kipp operates a bus or truck service from the hotel to the dive boat on a twice daily basis.

For those seeking the ultimate in privacy, Kipp has developed a new dive vacation package in conjunction with the London House Condominium. This beautiful resort facility is on the northern end of Seven Mile Beach, far from the hustle and bustle of tourist traffic. Guests can enjoy their own private apartments complete with balcony and kitchen facilities.


In addition to the three different resort vacation packages for individuals and families, Kipp has also put together special programs for larger dive groups. He works closely with shops, clubs and individual tour group leaders. He has sufficient boats, tanks and divemasters to provide personalized service for groups.

Kipp's latest enterprise has been the



development of snorkeling tours, scuba tours and scuba training for visiting cruise ship passengers. This specialized program is under the supervision of Kipp's wife, Kathy, also an ex-IBM executive and enthusiastic diver.

At this time, Bob Soto's Diving provides snorkel and scuba diving activities for eight different cruise ships: *Song of Norway*, *Fairwind*, *Boheme*, *Mardi Gras*, *New Amsterdam*, *Starward*, *Southward*, and *Rhapsody*. In order to support this burgeoning program, Kipp has built a new shore diving facility called Bob Soto's Scuba Centre. It is here that students are taught basic scuba safety in a protected ocean environment. In addition to its training programs, the new facility has a lovely scuba boutique for shopping.

Today, Cayman Islanders regard Ron Kipp as the man who made it big. He has parlayed one small dive charter business into five major operations which service just about every aspect of the dive resort business. His ability to achieve success is no longer questioned. 

FOR MORE INFORMATION

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Grand Cayman, B.W.I.
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ISLE ROYAL FLYER

The National Park Service has just released a flyer on diving in Isle Royal National Park in Lake Superior. The flyer discusses factors affecting divers in the park including weather, water temperature, air fills, depth/decompression and emergency procedures. Regulations are presented covering registration, artifacts, shipwrecks, dive flags, moorings.

The flyer also lists pertinent information on ten major shipwrecks around Isle Royal such as location, size, depth, date of sinking and underwater features.

The flyer is available from Isle Royal National Park, 87 North Ripley St., Houghton, Michigan 49931.

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Moray Industries Ltd. of New Zealand and Moray Industries Pty. Ltd. of Australia are now fully owned subsidiaries of Walker Rudkin Industries Ltd. Walker Rudkin is a leader in apparel and leisure wear.

The head office for the Moray group will be based in Devonport, NZ under the direction of G.B. Carrie and in Sydney, Australia under Peter Gubb.

COLUMBIANS AT CO

College of Oceaneering has been selected by the Colombian government to provide specialized training for six Colombian Navy divers and one civilian government employee. According to Jim Joiner, president of the College, "These men are all experienced shallow water divers who have done search and rescue, salvage and special projects. The specially designed course they will undergo at the college will consist of training in our fully operational bell/saturation system in open water as well as a course in operation and use of the JIM and WASP diving suits."

MEXICO TRAVEL/DIVE GUIDE

Michael and Lauren Farley, authors of the newly revised *Diver's Guide to Baja California*, are presently working in conjunction with Fonatur (the Mexican Tourist Council), to compile research for a comprehensive diver's guide to all aquatic recreational areas of Mexico. The new book entitled, *Diver's Guide to Underwater Mexico*, will be published this fall.

The new diver's guide will contain an index of tour operators, travel agencies and dive operators currently offering established tours on a regular basis to any part of Mexico. Any professional organization interested in being listed in the travel/dive index section of the book should send pertinent information to: Marcor Publishing, 3600 S. Harbor Blvd., suite #320, Oxnard, CA 93030.

On your next dive vacation. *dive* as the Belizeans do!

With the largest Barrier Reef in the Americas, it's no wonder Belize is becoming "the diving wonder" of the world.

by Stuart Dornfield

I met David on a recent trip to Belize while doing an article on charter sailing. Asking around town, I soon learned that David not only owns one of the largest charter fleets in the western Caribbean called *Sail Belize*, but also owns one of the best-known "dive" companies ... you guessed it ... *Dive Belize*!

David Gegg has lived in Belize most of his life. He knows everyone. And if there's something that needs doing, David can get it done fast.

Throughout our 3-day dive trip, David's crew was very professional. They navigated across one of the channels in Light House Reef, the atoll outside Turneffe, and explored the famed Blue Hole. I especially loved Glovers Reef.

The next day we headed north to San Pedro and all the resorts on Ambergis Cay.

The waters in and around the reef teem with all sorts of fish, sponge and coral life. It's a living ecosystem ... much of which can be observed at less than 40 feet.

The 3 days went quickly. Yet as we headed back to the marina, I couldn't help but envy David's lifestyle. Being able to live and work in such an unspoiled, untouched "paradise" without the hustle and noise of the city.

Thanks David ... I'll be back!

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ON DIVING IN BELIZE,
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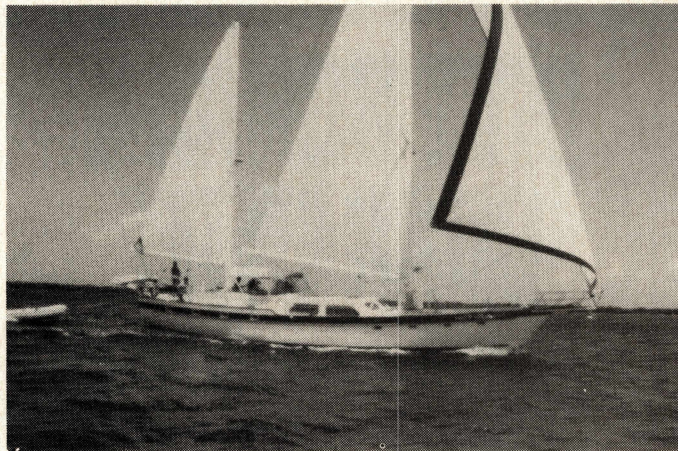


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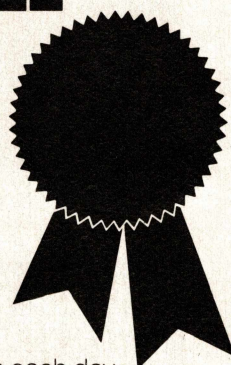


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**TEXT AND PHOTOGRAPHY
BY KEVIN WADLOW**

When first seen through the clouds of fish, it looks like a city left unfinished—or maybe a structure devastated by catastrophe. It does not look like anything nature intended to be on the ocean floor—at least it doesn't yet. A three story shaft of steel girders, resembling a gargantuan Erector Set, stands like a sentry over a massive pile of metal and concrete rubble. It is an odd sight to encounter 110 feet down on the ocean floor.

The metal is not the remains of an unlucky surface vessel. It is the discarded swingspan of the old Seven Mile Bridge,

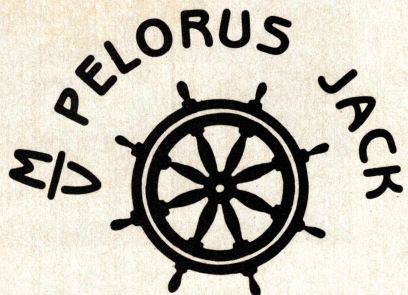


photo/courtesy Florida Keys Keynote

just south of Marathon in the Florida Keys. A new bridge has replaced the 71 year old railroad span, leaving the old bridge open to fishermen and hikers who wish to walk out to sea.

The 253 foot swingspan was a mechanical marvel. For seven decades it rotated on a central pivot to allow the passage of tall boats through the bridge. It had to be removed for navigational purposes in late 1982.

The new Seven Mile Bridge has been built with a soaring arch for boat traffic. The old bridge's swingspan had been locked shut since a bizarre accident in March 1981. A piece of heavy equipment being trailered through the swingspan struck a 1,000 gallon propane tank beneath the bridge tender's shack, perched atop the span. An explosion and fire resulted that killed the bridge tender on duty and completely destroyed the bridge's rotational mechanism.

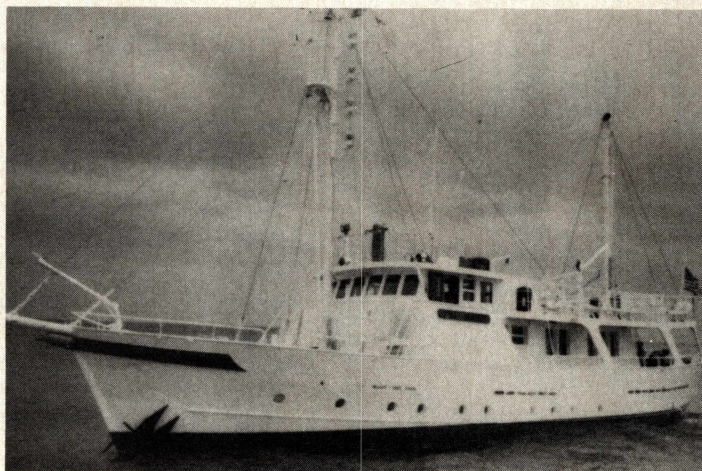


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UNDERWATER BRIDGE

The Florida Keys Artificial Reef Association, a group formed to spearhead creation of new fish habitats, obtained use of the swingspan material. The artificial reef backers are hopeful that creating new habitats where fish can live and breed will actually increase the number of fish in Florida Keys waters. This might also take



some human pressure off the nearby coral reef tract that made the Keys famous.

A site for a new artificial reef was approved by the U.S. Army Corps of Engineers in 110 feet of water, about five miles south of the deep water channel through the Seven Mile Bridge.

After the obsolete centerpiece was cut into manageable pieces, it was barged out to the new artificial reef during June



and July of 1982 to be dropped on an otherwise barren patch of ocean floor.

The artificial reef site off the Seven Mile Bridge now has had 4,500 tons of metal and concrete placed on it, making it the largest of the seven new artificial reefs created in Keys waters during the past three years. As hoped, the site has attracted large numbers of fish to the area. It is already known to local fishermen as a place where jumbo grouper hang out, while a wide variety of snapper and tropicals also have declared the bridge home.

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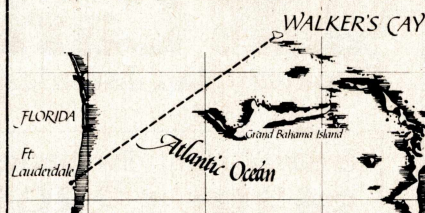


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Marine organisms have taken hold on the bare steel and concrete, material that should provide an excellent base for encouraging the growth of new coral.

While the new artificial reefs were primarily designed to boost the local fish life and lure boaters away from the fragile coral reef, they also promise a unique experience to the diving community: How many places in the world offer the chance to dive a bridge?

Charlie Phinzy, an equipment repair specialist for The Diving Site, a Marathon shop, has made numerous trips to the old bridge. "If you get tired of seeing coral, it's the closest thing we've got to a wreck



in the Middle Keys," he said. "And, it's big, real big. The thing that really gets to me is the fish life on it. At times, it's totally covered with glass minnows. When they are there, you can just sit on a girder and watch yellowtail, jacks and bonita come through and strike."

Said Bob Brayman, owner of Hall's Diving Center in Marathon, "I've never put a group on the bridge that didn't come up ecstatic."

Visibility is typically good on the old bridge reef, averaging about 60 feet. The most noticeable feature is a three story tall section which is just right for poking among the girders without the claustrophobic feelings that may hit while deep inside a wreck.

The jumbled mass of discarded metal and concrete nearby is not as striking as the tall section, but it does provide a myriad of nooks and crannies that house a wide spectrum of sea creatures.

A short distance away, the bottom has yet to swallow the large rotational bearing, laid out on the ocean floor like an enormous sundial.

The bridge dive, while limited to advanced divers because of the 100 foot depth, is being included by many of the mid-Keys dive shops on a request basis. Most offer a shallow reef dive as the second tank stop after visiting the bridge. >>>

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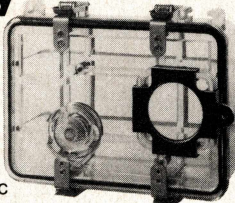
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DIVI HOTELS

Scott D. Wiggins was recently appointed director of marketing and sales for the Divi Hotels Corporation. Wiggins, of Ithaca, NY, will help to oversee Divi Hotels sales representatives in their respective territories throughout the United States. He will concentrate his efforts primarily on the 122 room Tiara Beach Hotel on Cayman Brac and the 110 room Flamingo Beach Hotel on Bonaire.

Divi Hotels is a rapidly expanding chain that owns and operates several hotels in Aruba, Cayman Brac and Bonaire. The Divi Hotel chain also owns and operates the 152 room Divi Divi Beach Hotel, the 204 room Tamarijn Beach Hotel, the Dutch Village luxury apartment time-share complex and the Papagayo Restaurant on Aruba.

ARCHAEOLOGY CLASSES

Tony Spooner of Pulse Power Systems, Inc., in conjunction with Lady Cyana Divers, is instituting a school for divers interested in practical marine archaeology. Classes will begin this month at the Lady Cyana Dive facility in Islamorada, Florida.

Divers will have the opportunity to learn up-to-date techniques of U/W search and recovery using the latest equipment available; towed diver-operated sled and electronic location instruments, including metal locating instruments.

The aim of the five day course is to educate divers in the practical aspects of marine archaeology so they will know how to preserve maritime heritage for posterity while collecting treasure.

Candidates for these courses should be open water certified divers who have a serious interest in locating and excavating ancient wrecks with the view to preserving and sharing knowledge gained rather than plundering for monetary gain.

For further details please contact: Tony Spooner, F.I.P.M.A., 2464 N.W. 135th St., Miami, FL 33167, (305) 624-3516, or Lady Cyana Divers, Islamorada.

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CAYMAN PACKAGE

The Cayman Islander Hotel and Bob Soto's Diving Ltd. have joined to offer a Bonus Scuba Dive Package with Cayman Airways. It includes four days/three nights accommodations, air fare from Miami, two tank morning boat dives, unlimited offshore diving and one morning or afternoon one tank dive.

For more information write the Cayman Islander, 5920 Rodman, Hollywood, FL 33023, or phone toll free (800) 327-3835. In Florida call (305) 987-8880.

IMPOSSIBLE DREAM TRIPS

Seaventures International is offering two special trips aboard the *Impossible Dream* to the Berry Islands and Bimini November 10-15 and December 16-21. The first trip will benefit the Our World-Underwater scholarship fund and the second, the Divers Alert Network.

For information contact SeaVentures International in Indianalantic, FL.

PALAU PACIFIC RESORT

Tokyu Hotels International, operators of Pan Pacific Hotels, has appointed Yasuhiro Uetani to the post of general manager for Pan Pacific's new 100 room Palau Pacific Resort in Koror in the Republic of Palau, opening this year.

The Palau Pacific Resort features southsea island cottages with verandas, two restaurants, open air cocktail lounge, complete conference facilities, library and video lounge, professional marine sports shop, beauty parlor, gift shop, two championship tennis courts, pool and Koror's only white sand beach.

DAN BENEFIT TRIP

Plantation Beach Resort, 22 miles south of Roatan, is donating 40 percent of the proceeds of a dive vacation package to the Divers Alert Network (DAN). The trip will run Aug. 11-18 and a DAN representative will attend to answer questions about DAN or diving medicine in general. The trip is for 18 divers only.

For more information contact Plantation Beach Resort, 6455 Richmond, Houston, TX 77057.

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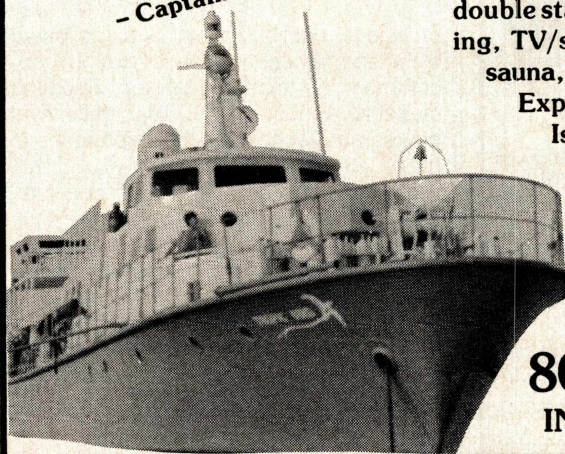
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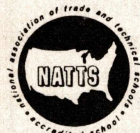
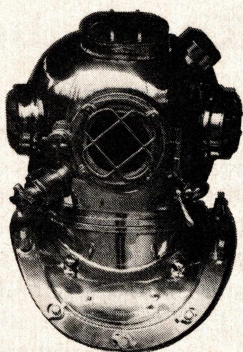
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SCUBA BOWL '84

The Cayman Islands are gearing up for Scuba Bowl '84, Sept. 29-Oct. 6.

The original concept of Scuba Bowl, from its inception in 1981, was to present a program to dive shop owners and managers which would be educational, give participants the opportunity to experience magnificent diving and the chance to meet like-minded professionals in a unique atmosphere.

Dive shops have become increasingly active in dive travel packaging, thus the need for accurate information on popular dive destinations has become an important requirement of the dive industry. Scuba Bowl fulfills this need.

Lectures and seminars will be presented by Al Hornsby, vice president, PADI, and Paul Tzimoulis, editor/publisher of SKIN DIVER Magazine and other successful dive travel entrepreneurs.

Scuba Bowl participants have the opportunity to dive with various operators during the course of the week at a good selection of dive sites.

The all inclusive package for Scuba Bowl '84 is tax deductible. The packages from Houston and Miami include round-trip air fare, accommodations at the Royal Palms Hotel on Seven Mile Beach, a one tank dive each day, socials each evening, departure tax (U.S. and Cayman Islands), airport transfers, transportation to evening socials and tax and gratuities on hotel rooms.

The Scuba Bowl Committee hopes to close registrations by the end of August and advises those who wish to participate to register early.

For further information, contact Linda Riemensnyder, Cayman Islands Department of Tourism, 250 Catalonia Avenue, Coral Gables, Florida, 33134; telephone (305) 444-6551.

CHURCH PHOTO COURSES

Jim and Cathy Church are teaching four U/W photography courses during August and September in St. Thomas, U.S. Virgin Islands. There is a ten day multi-level course August 5-15, followed by a special critter course (which concentrates on marine life) for repeating students August 19-26. Two multi-level courses are scheduled for September 2-9 and 16-23.

Each class begins with three and one-half days of classroom work and daily diving from Villa Olga. The remaining days of each course are spent at sea on the 68 foot, live-aboard *Mohawk II*. Kathie Mullins, who has assisted the Churches for the past five years, will be assisting and processing film aboard *Mohawk*.

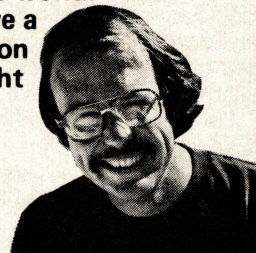
For a brochure write to: Jim and Cathy Church, P.O. Box 80, Gilroy, CA 95021-0080, or call (408) 842-9682.

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HI-TECH DIVER

(Continued from Page 48)

and conferences several times a year to keep abreast of the diving industry's requirements and new technologies. Findings made during these seminars are incorporated into DIT's training as fast as they prove practical. DIT corporate officers also make visits each year to the heads of various diver employer companies to discuss matters relating to DIT's diving curriculum.

The instructors are well qualified to work with students in developing expertise with all of the diving equipment found at DIT. Almost all types of diving equipment developed since World War II are found on diving jobs to accomplish specific tasks. However, the comparatively new, lightweight helmets and wetsuit gear, including hotwater heated suits, are becoming more predominant and are also used in DIT training.

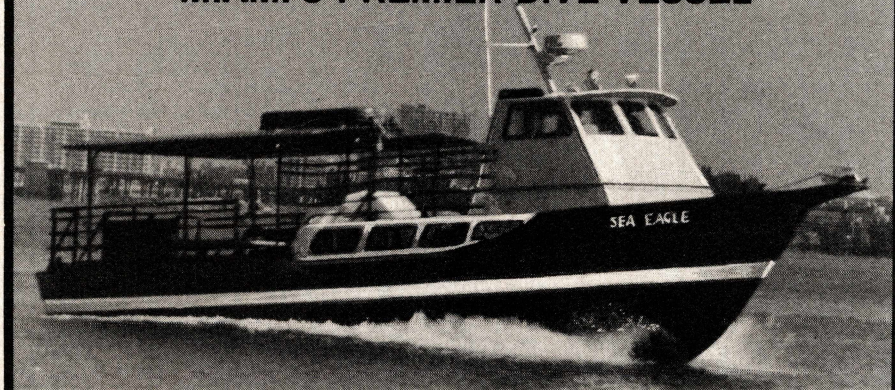
At DIT there will be found 61 units of 18 types of diving helmets and masks available for training. In addition, there are 15 complete scuba rigs. There are six types of floating equipment, including the school training barge, a deep dive barge, an LCM-3 work boat and a 30 by 40 foot dive barge, plus one 30 foot boat routinely sunk and salvaged by students as a training project. About 130 reference books and manuals will be found in the school's library, as well as numerous slide and video training programs.

All the diving jobs in the world will not be found in the oil patches. Many underwater workers find jobs in construction of ports and harbors, of tanker terminals, outfall sewer pipelines, in the inspection and maintenance of hydroelectric and irrigation dams and waterways, in the maintenance of docks and piers, in the inspection and repair of vessels of all sizes, and in small boat and ship salvage. An increasing number of divers earn an excellent income scrubbing the hulls of vessels of various sizes, including military ships and submarines. Still others form diving businesses to harvest products of the sea such as abalone, sea urchins, and various other marine life.

All of these varied underwater tasks provide highly paid jobs for divers whose special skills with tools and equipment, developed through years of experience or adapted from conventional topside tools and equipment, make their services of great value to an employer. In a well rounded course such as found at Divers Institute of Technology all of the equipment and references are not slanted toward offshore oil work. There is too much other work in the world demanding the attention and skills of well trained divers for a school to train potentially limited underwater workers.

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
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easy, high pay. Starting tender/divers might earn \$20,000 annually and the best saturation divers will probably eventually earn \$100,000 a year. Commercial diving can be all of this. But it is also very demanding, very tiring and, frequently, very dirty, cold work that takes a diver, and keeps him/her, away from home for long periods of time. To get to the top in the profession of diving requires the basic things that DIT is designed to provide a serious diving student; a solid foundation of diving knowledge, practical experience, safety procedures, and the ability to perform well underwater with almost every known kind of diving equipment. What a student gets out of the available facilities and instructor knowledge found at Divers Institute of Technology will depend upon him/her. The big bucks in diving are there. But it takes a high tech diver to get them in the demanding field of modern high technology diving. 

OREGON COAST

(Continued from Page 47)


the Oregon coast. Local divers claim that visibility can reach 50 feet or better during the summer months.

Newport is also a very productive area for diving, with some very impressive reefs. In addition to the brilliant red and green anemones, these areas are covered with soft corals. The reefs are only accessible by boat, owing to the steep cliffs in this area.

Near Tillamook, Three Arch Rocks is a superb location during calm conditions. Just north of Netarts Bay, these majestic sentinels produce some of the best hunting grounds along the entire coast.

Nehalem Bay, about 15 miles north of Tillamook, is one of the most productive areas for relic divers. On one dive just inside the mouth of the bay, I took a limit of Dungeness crabs and was navigating back to my entry point when I came upon a wreck in less than 30 feet of water. Because of the artifacts I found on this site, it was apparent that no one had been here previously. The Department of the Interior has been instrumental in helping me to date this wreck, through the artifacts I recovered, to somewhere between 1903-1918.

Relics have been brought up in this area which were simply discarded over the sides of floating vessels as well. Some of these, such as bone China cups, saucers and bottles, have been traced to origins in Spain and the Orient and are a common find. Cold water has a retarding effect on decay and many wooden relics are still in excellent condition.

With a history of wrecks, beautiful marine life for the photographer and a bounty of seafood for the table, the Oregon coast has a lot to offer any diver. By all means include it on your list of upcoming aquatic adventures. 

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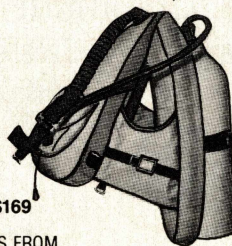
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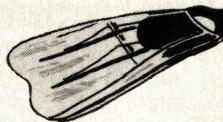
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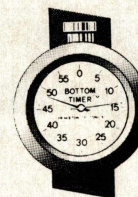
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WRECK PHOTOGRAPHY

(Continued from Page 53)

have difficulty triggering the slave because sunlight may overpower the light reflecting back from the subject to the slave sensor. Having both strobes triggered by a sync cord (with a Y or T connector) is more reliable.

Two strobe lighting is often required for wide angle photography in the dark confines of a wreck where there is little natural light. As examples, when we photographed the large, 18 inch diameter shells in the hold of the *Yamagiri Maru*, two wide beam strobes were needed to cover the picture area of our 15 mm lens. And, when we photographed a zero fighter in the hold of the *Fujikawa Maru*, two strobes were needed to light both the interior and exterior of the cockpit.

MEDIUM DISTANCE SUBJECTS

Use a Nikonos 35 or 28 mm lens, or the normal lens of a housed or other camera, to move in and isolate specific subjects. These can be used as follow up shots to your wide angle establishing shots to identify specific subjects or action in a slide show or print display, and as transition shots from your wide angle shots to your close-ups. Some examples are listed below:

1. An open porthole, the ship's helm, engine room telegraph or any other identifiable part of the ship's equipment add variety to your pictures.

2. A head and shoulder diver portrait, framed by wreckage, can portray exploration. At Truk, placing your model between the cargo booms of the *Fujikawa Maru* can provide a beautiful setting. Have your model wear a red BC, gloves or bandana to match the soft corals.

3. Views through portholes showing decking, booms and distant divers can be taken at many wrecks. Such pictures have been winners in several U/W photo contests. An upward view of three divers taken through a porthole on the *Rhone* appeared on a recent SDM cover. Experiment with camera angle, lighting and dif-

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ferent poses to add your own creative touch to this basic set-up. You may be surprised at what you can do!

4. Fish and other marine life living in and around many wrecks are excellent subjects: Angelfish glide over and around the *Oro Verde*; squirrelfish hang beneath the propeller shaft of the *Rhone*; and lionfish slowly stalk minnows in the holds of the *Jolanda*.

5. And at Truk, photographs of china, cooking utensils, ammunition and bones emphasize the sadness of war.

MEDIUM DISTANCE EXPOSURES

Expose for light bulkheads and corals as you would for light skin tones and bracket toward the smaller apertures if you suspect that painted bulkheads and/or growth are light and reflective. If the wreckage is covered with dark, non-reflective growth, bracket toward the wider apertures. If you are taking a diver portrait, of course, expose for the skin tones and allow the wreckage to go dark.

CLOSE-UP AND MACRO SUBJECTS

Clusters of solitary corals are good subjects for extension tubes or close focusing 50 or 55 mm lenses. These are best photographed when the polyps are open. Look for them in shaded areas. If there are none, you'll have to dive at night or when there is a current, to photograph the yellow cup corals open.

Soft corals, such as those at Truk Lagoon, can be tricky to photograph because their colors and reflectances vary greatly. The deep red corals require more light for an exposure than you might expect, while the ones with white or yellow stalks may require less. Use a flashlight to see colors. Some white and dull gray soft corals are actually white with lovely pink polyps; and boring black may be brilliant red.

On many wrecks, tiny gobies peeking out from their lairs are popular extension tube subjects. Scarlet *Limas* can often be found in dark crevices, and world's toughest plume worm lives on the upper tip of the *Rhone's* propeller. The north

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WRECK PHOTOGRAPHY

wall of the *Balboa's* boiler is covered with plume worms and her boiler tubes are U/W condos for banded coral shrimp.

Close-up and macro subjects are generally best on the older wrecks that have more growth to provide homes for the smaller creatures. Growth is often better on wrecks in turbid water because it contains more food for the filter feeders.

WORKING INSIDE WRECKS

Working inside some of the darker passageways, compartments and holds, or even outside some Great Lakes or New Jersey wrecks, can be compared to night diving. Camera settings are hard to see and SLR systems difficult to focus, in dark conditions. Therefore, use night photography techniques.

Attach a small light to your strobe to help with the aim, to see camera settings and to illuminate subjects for SLR focusing. The light may frighten fish that live in dark compartments, so be prepared to turn it off if the fish are your subjects. Pre-set focus before entering the wreck and practice setting the aperture by the feel of the click stops.

The floors inside many passageways and compartments are covered with a layer of silt. The slightest kick of a fin, the currents generated by your body movement and bubbles or a pressure gauge or octopus regulator dragging below you can stir up a cloud of silt. Therefore, you must move carefully.

The overheads, however, are usually cleaner in frequently visited compartments because most of the loose silt may have been cleaned off by the bubble streams of previous divers. Therefore, if you adjust your BC so it keeps you off the deck—and up closer to the overhead—you can move slowly through the interior with a minimum of stirred up silt. But a word of warning: Beware of twisted piping and tangled wires which hang from some overheads.

Wear gloves so you can pull yourself along. If you must kick, be sure your buoyancy is balanced so you can hold your body horizontally. Too much weight balanced against an over inflated BC forces your fins into the silt.

Diving on wrecks can be hazardous. Don't take a camera along unless you are sure it is safe to do so. Many shallow Caribbean wrecks were purposely sunk in safe areas ideal for photographers and beginning divers. But if you are about to do your first dive on a deep wreck in cold water with poor visibility, possibly a strong current and maybe nets or fishing line draped over the wreckage, leave your camera at home. Learn how to dive these mysterious wrecks safely first, then go back with a camera.

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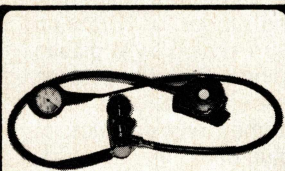
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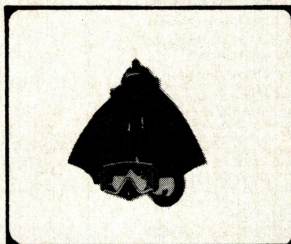
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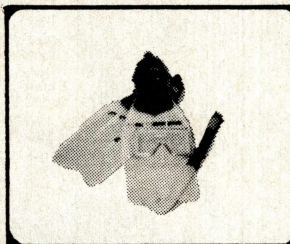


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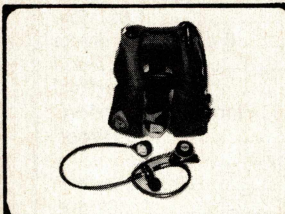


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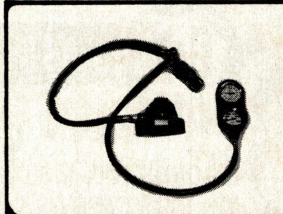
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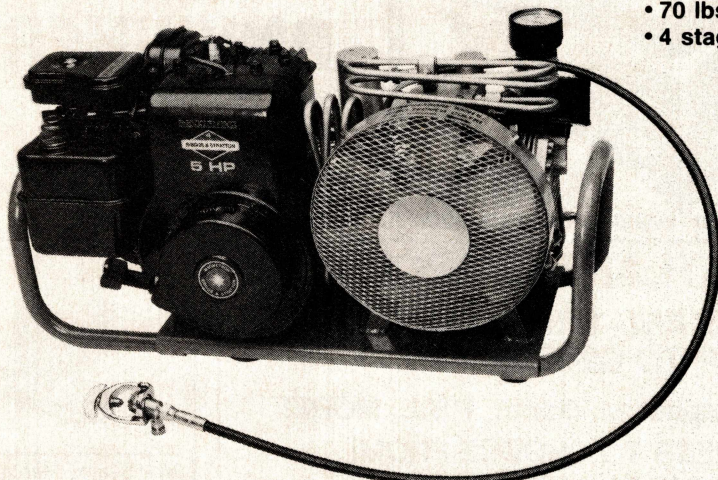
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Passengers	8 persons/4 divers
Keel	Wood
Material	Hull: nylon/PVC
Floorboards	Floor: polyester/PVC
Maximum horsepower	45
Colors	Gray, blue trim
Price	\$2,400

Steve Elliott of Elco Marine, Santa Ana, California, brought our test boat to Dana Point Harbor for its demonstration run. Decked out in gray with blue trim, it was a perfect color match for the 40 horsepower Suzuki engine mounted on its transom. Loaded with four persons and two sets of diving gear, the Sea Eagle headed out into the three foot westerly swell. Two-thirds of Suzuki's horses were enough to bring the vessel to an immediate plane. When it cut right through the light chop, I realized this was a serious dive boat. That opinion was reinforced when Elliott threw it into some sharp turning maneuvers. The deep-V keel dug in and handled them in stride without skid-

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ding. At full throttle, we felt the exhilaration of speed with no loss of control. Most of the time, though, we ran at about two-thirds throttle. According to Elliott, a 30 horsepower engine would handle most diving applications on this boat.

The GT-45 and its Explorer series cousins represent an attempt by Sea Eagle to move upscale in the inflatable boat marketplace. It's a good looking, well made product which handles exceptionally well. The versatile vessel can be trailered to the dive site or be carried on top of a large van. It is capable of long runs in open seas. At a price of \$2,400, it merits serious consideration. For further information contact: Sea Eagle, c/o Harrison Hoge Industries, Inc., 104 Arlington Avenue, St. James, New York 1170-2898. 🐠

SPEARFISHING NATIONALS

The 1984 U.S. National Freediving Championships, sponsored and sanctioned by the Underwater Society of America, will be held August 9 at Mackerel Cove Town Beach in Jamestown, RI. The Connecticut Council of Diving Clubs will be the host. The winners of this competition will be the National Spearfishing Champions, eligible to compete in the World Spearfishing Tournament.

More information may be obtained from the Competition Director, Philip Wisniewski, 327 Groveland Ave., Warwick, RI 02886, (401) 739-6649, or from Gary Thompson, director of freediving for the Underwater Society of America, 1184 Wembley Rd., Los Alamitos, CA 90720, (213) 598-0032. 🐠

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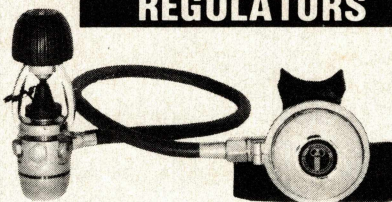
U/W VIDEO

Aquaport, a small company in Homestead, Florida, has developed an underwater video system that operates like a hookah rig. In this case the video recorder stays on the surface but not in the boat. Although this configuration requires a 50 foot cable between the recorder case and the video camera, Aquaport claims the advantages far outweigh any inconvenience caused by the cable. This system is the lightest full size VHS system being produced for underwater use. It also is the least expensive to produce, which should make it affordable to many divers who might otherwise stay away from underwater video. The Aquaport 2-50 was originally designed as a rental system. Modified versions are being developed for consumers. 🐠

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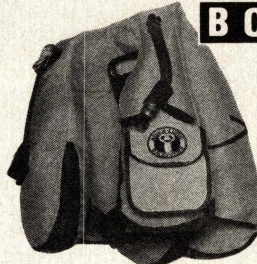
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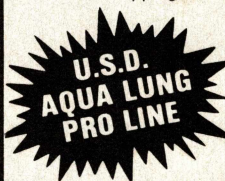


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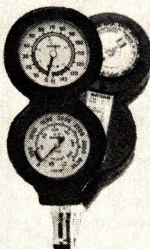
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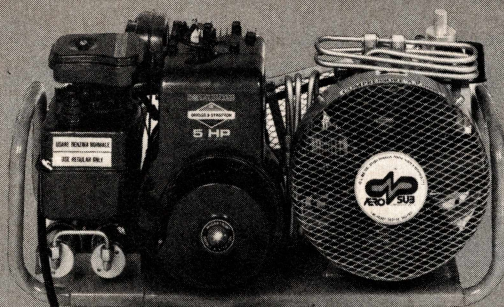
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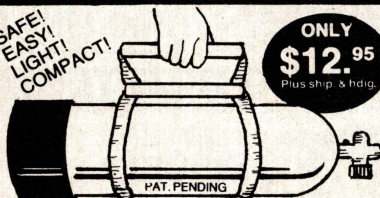
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ANDREA DORIA SAFE TO BE OPENED

The bank safe salvaged from the sunken liner *Andrea Doria* will be opened live, on camera, during the course of a two hour nationwide television broadcast August 16, 8-10 pm, New York time. The host for the event is George Plimpton.



photo/courtesy NY Aquarium

The safe was recovered by an expedition headed by filmmakers Elga Andersen and Peter Gimbel.

The *Andrea Doria*, flagship of the Italian Line and the pride of Italy's postwar fleet, went to the bottom July 26, 1956, after being rammed on her starboard side by the Swedish passenger ship *Stockholm*. She was only 11 hours from New York when disaster struck. The sunken *Andrea Doria* lies 50 miles south of Nantucket Island in 240 feet of water.

As the *Andrea Doria* died, two rumors were born:

1.) The *Doria* would have survived the collision, but sank because a crucial watertight door was missing.

2.) A fortune in cash and precious stones went down with the ship, locked away in two of her safes.

Are those rumors true? Was the door missing? Is there a treasure? Those were the questions that The Doria Project—the 35 day Andersen-Gimbel expedition—sought to answer. The movie about their quest, *Andrea Doria: The Final Chapter*, is a major element of the two hour television special. 📺

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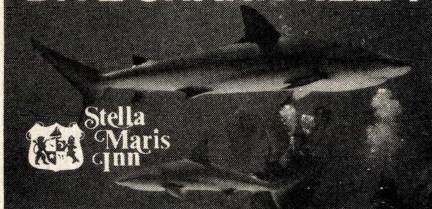
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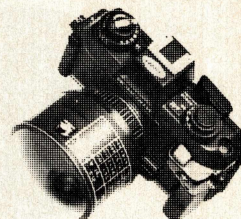


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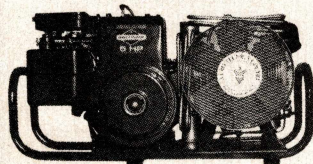
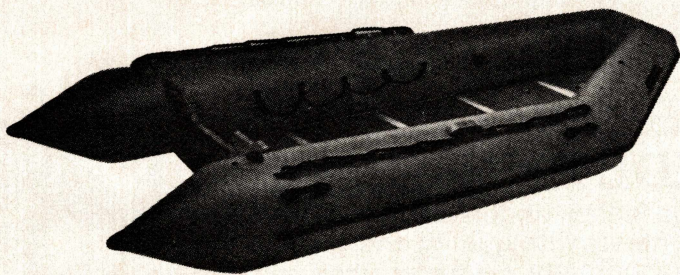
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Scarr is author of *Touch the Sea*, a book on marine animal behavior.

Craig Barshinger is the inventor and manufacturer of The Edge decompression meter/computer and is president of Orca Industries, Inc.

Norine Rouse is the owner and operator of the scuba club of the same name in West Palm Beach, Florida. She is a highly regarded expert on sea turtles.

Gale Livers is director of public relations for Ikelite Underwater Photographic Systems, Inc. and the author of several books on underwater photography.

Each of these leaders will be following La Mer's exclusive itinerary to the Coral Sea and the Great Barrier Reef. The 12 day voyages provide a comprehensive tour of the entire reef system. La Mer expeditions to Australia sail aboard the 80 foot *Coralita* under the command of Captain Walley Muller. Each departure also includes two days in Sydney.



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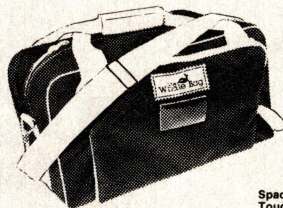
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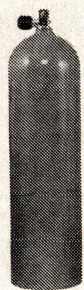
Houston Scuba Academy, Inc. needs a 70 plus foot boat, fully equipped to handle sport divers and Coast Guard licensed. Trips will range from 30 to 110 miles offshore in the Gulf of Mexico. Interested boat owners should contact Mike Price, 12505 Hillcroft, Houston, TX 77035, (713) 721-7825.

SCUBA BASH

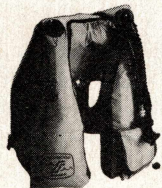
Atlantic Divers, Nags Head, North Carolina, will be the site of the Second Annual Scuba Bash. This event will be held August 17-19.

Scuba Bash will consist of beach dives on local shipwrecks and charter boat dives to numerous offshore shipwrecks. Drawings will be held for thousands of dollars worth of scuba gear and diving trips. There will be film and slide presentations on Saturday evening. Mini-seminars will be held on numerous subjects. Representatives from several dive equipment manufacturers will be present to answer any questions you may have on their products. On Saturday night there will be a beach music dance.

There is no registration fee for this event. For information contact: Atlantic Divers, P.O. Box 416, Nags Head, NC 27954; or call (919) 441-5113 and ask for Scuba George.



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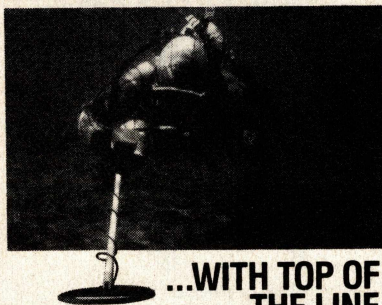
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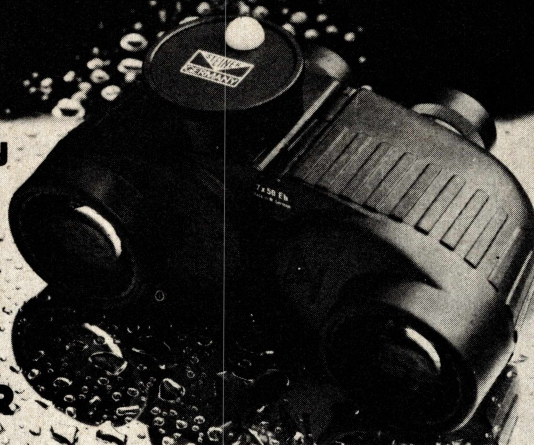
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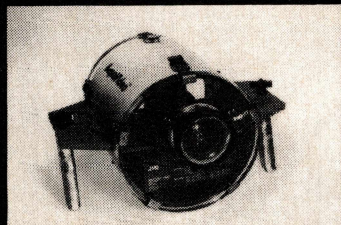
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NAUI BRANCH MANAGER

Bob Sheridan has been appointed the manager for NAUI's mid-America branch (Region 5). He will operate from his home and business in Westmont, Illinois, a Chicago suburb. The branch covers 12 states from Kansas, Nebraska and the Dakotas, east to Michigan, south to Kentucky and north to Canada.

Sheridan founded Anchor International, Inc., a multi-faceted diving business of three retail stores in 1972. The same year he was certified as a NAUI Instructor. He teaches diving at all levels from basic through specialty and has participated in numerous ITCs and crossovers.

Rx FOR DIVERS

(Continued from Page 30)

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BASKIN REP

Gary Geiger is now the U.S. representative for Baskin In the Sun, Kaliko Beach Club, Haiti. He is a PADI master instructor with 20 years of experience on the reefs of the island. Geiger can be contacted at 10132 Buffton Dr., St. Louis, MO 63123; (314) 638-9304.

DIVER'S GUIDE TO UNDERWATER AMERICA

The publisher of the *Diver's Guide to Underwater America*, featured in the New Books section of the June SKIN DIVER, has a new address. For information about the book contact Divesports Publishing, P.O. Box 1397, Austin, Texas 78767-1397.

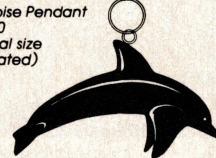
YMCA U/W COLLEGE

The National YMCA Underwater College in Key West, Florida will conduct a session this August for the convenience of those who wish to prepare for leadership in underwater activities. Each session will present a series of courses which may be taken singly or in combination, depending upon the interest and background of the individual.

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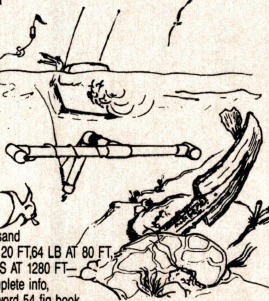
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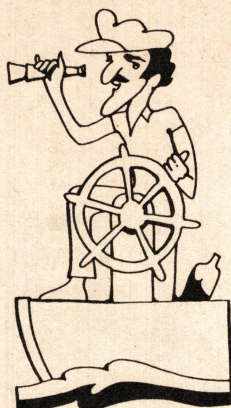
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Phone not always attended so call nites & weekends too. Avoid early morning.

*Liebhartz sensitivity exceeds that in old bleeper gradiometer by $t^2(L)/t(B)\Delta t(L)$.



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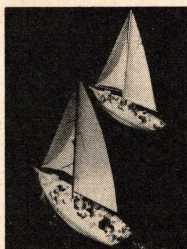


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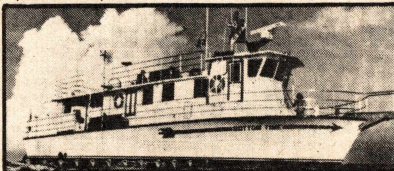
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On Sunday, August 19, Chesapeake Diving Center and the Cancer Treatment Center of Riverside Hospital will sponsor a treasure hunt.

All entry fees, \$10 per diver, will go to the Cancer Treatment Center at Riverside Hospital. Registration will be taken the day of the event, at the dive site, 10:00 am to noon.

All divers must be certified, dive with a buddy (single divers will be paired), have a buoyancy compensator and submersible pressure gauge. The treasure hunt will be held at Gibbs' Lake, just off Interstate 64 in Hampton, Virginia from 1:00 until 2:30 pm.

For more details, write Chesapeake Diving Center, 1815 West Queen Street, Hampton, Virginia 23666; or call (804) 838-2218.

U/W CLASSROOM SCHOLARSHIPS

Ian Koblick, president of Marine Resources Development Foundation of Ft. Lauderdale, has announced that scholarships are available for a study and participation course in the first underwater classroom laboratory program in the continental United States. The \$500 scholarships are being made available to qualified high school, junior college, college and university students as well as to high school teachers. The minimum age is 15.

There are six one week courses, with each class running five days and nights until August 30, at John Pennekamp State Park in Key Largo, the habitat site. The limit is eight students per week.

The objective of the course is to produce students who will look to the oceans for a possible career choice as they gain knowledge and underwater research skills in a tropical environment. This valuable experience allows the students to become certified aquanauts and to understand and appreciate our ocean and its potential to supply food, water, minerals and energy for mankind.

For course study topics, further information and details of the teacher's scholarships, please contact Marine Resources Development, 1527 N.E. 4th Ave., Ft. Lauderdale, Florida, 33304; (305) 764-1391.

According to the advertising copy, "...just add air and water" and you are ready to dive. Well, not quite. You will still need a few accessories such as a tank, mask and fins. But the Tabata Total Diving System is an attractive package at an attractive price. It includes a buoyancy compensator jacket, regulator, console and gauges.

A relatively new name among American manufacturers, Tabata USA is a wholly owned subsidiary of Tabata Japan. That's right, I said American manufacturers. All Tabata products are designed specifically for the American market. All regulators and some of the hardware are produced in the company's Torrance, California plant. That includes regulators for the Japanese market. Other items may originate in Japan or Europe. Formed in 1978, the company had previously been an OEM (Original Equipment Manufacturer) of rubber products for several American firms. Today their products are sold in the United States only under the Tabata trademark, although they still do OEM work internationally.

In putting together the Total Diving System (TDS), Tabata has packaged top of the line components which include everything a diver could ask for plus a few things he or she didn't even think about. Let us look at the items separately, then put them together and see how they perform in the water.

The Series 800 buoyancy compensator jacket is a well made, attractive unit decked out in blue and yellow with red piping at the seams. Made of rugged Cordura nylon, it should stand up to a lot of abuse. The jacket is attached to the backpack with a Velcro® band. As a matter of fact, there is enough Velcro in the Tabata jacket to outfit an Apollo spacecraft. Every pocket or strap closure is made with it, combining ease of operation with custom adjustment.

Tabata's designers seem to have thought of everything. The contoured shoulders are padded for comfort. A wide belly band with Velcro closure replaces the traditional strap and buckle arrangement. A crotch strap attaches to the belly band by Velcro, of course, and prevents the unit from riding up when inflated.

Two large, expandable pockets with mesh drain panels are provided. They are contoured down at the side, giving a diver the choice of placing the octopus second stage in either side. A smaller pocket on the cover of the right one will hold a small diving light. There is a D-ring on which to attach its lanyard. On the left side, a fourth pocket will accommodate a mini-dive knife. A buttonhole is provided to retain the scabbard.

The plastic inner bladder is eight mils thick, one of the heaviest in the industry. Inflation is accomplished through a low pressure fitting from the tank. For emergency use, a 25 gram CO₂ cartridge is

provided, or the BC can be inflated orally. There are two overpressure valves; one on the right shoulder and one in the auto inflator. The shoulder valve can be manually activated for quick air dump by pulling a lanyard on the chest. Even a whistle is included, attached to the inflator hose. The jacket and inflator assembly is covered by a one year warranty.

Included in the TDS system is Tabata's

TR-30 regulator with an octopus second stage and a console with gauges. The regulator features a balanced first stage with flow-through piston. There are two 7/16 inch diameter high pressure ports and four 3/8 inch low pressure ports, the latter on a 360 degree swivel. Tabata was one of the first manufacturers to meet the industry standard for wider high pressure ports. George Cozens tested the TR-30

Tabata TDS



for SDM in the February 1983 issue, finding it to be a good performing, dry regulator with no idiosyncracies. He concluded, "...its price is reasonable; its straightforward, conventional design and solid construction should give years of trouble-free use; maintenance is simple; its performance is good; and it comes with a limited, one-owner lifetime warranty."

The second stage housings are light-

weight plastic, with the octopus' non metallic parts colored orange for easy identification. Its 33 inch hose is six inches longer than that of the primary second stage. The position of all hoses coming off the swivel end cap can be customized to the divers preference. They work best when the first stage is mounted vertically on the tank. However, a diver wearing his/her tank high on the backpack might

bump his/her head on it. In that case, the regulator can be mounted with the swivel downward on all but low profile valves.

The compact console mounts three gauges back to back and there's a small slate and thermometer as well. The console is made of soft rubber which protects the gauges from shock while easily allowing their removal for service. The depth gauge is a diaphragm type, reading to 220 feet, with a maximum depth indicator. Unlike other max depth needles which require a coin or screwdriver to reset, this one has a knurled knob which can be reset by fingertip pressure. A screw on top of the gauge turns the entire face to zero for altitude compensation. The face is color coded to conform with the 5,000 psi pressure gauge, reminding the diver when to begin an ascent at each depth range. In an era when many manufacturers are going to plastic pressure gauges, it is good to see one with a chromed brass housing. A small thermometer is mounted underneath the depth gauge. On the backside is the familiar Finnish Suunto compass, along with a small circular slate. A slot on the side of the console accepts a pencil.

Our test dives were made at Ship Rock, Catalina Island, CA. Attached to an 80 cubic foot tank, the TDS was adjusted for a custom fit. The Velcro belly band can be set at any width desired, and cannot be confused with the weightbelt buckle. Further adjustments can be made by tightening or loosening the straps on the side panels. A tight adjustment moves the front buoyancy chambers toward the diver's sides if he or she wants to avoid the feel of a horsecollar BC. For those preferring more buoyancy in front, the side panels can be loosened. Unfortunately, the belly band will hit a tall diver across the lower chest rather than the waist. According to Tabata USA's national sales manager Larry Hagebush, this problem will be corrected in future editions of the 800 series jacket.

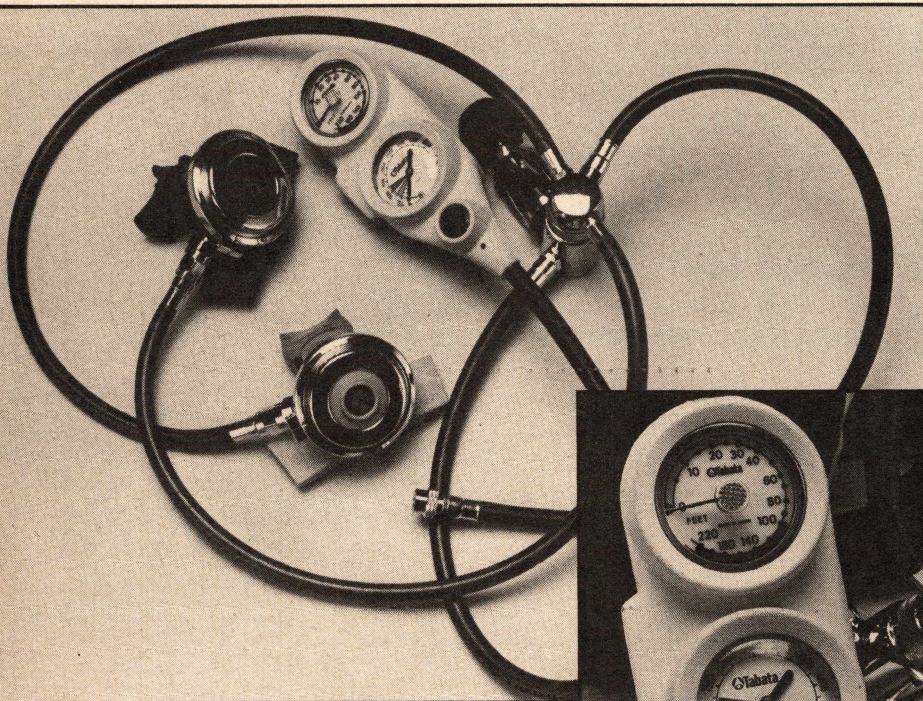
Surface swimming was easier in the facedown position, although the unit will adapt to swimming on the back. Air was dumped rapidly for descent and the system responded well to buoyancy adjustments on the way down. The regulator breathed easily with no leakage, even when working hard at depths below 100 feet. After some initial uncertainty regarding the positions of hoses, things fell readily to hand.

Tabata's TDS is available with a variety of options. Divers can choose among sizes and colors of jackets, number and types of gauges and consoles. The system described here, the TDS 806DX, is the top of the line with the best of everything available from Tabata. The package price is \$780, a savings of \$60 over components bought separately. For more information contact: Tabata, 20818 Higgins Court, Torrance, CA 90501.

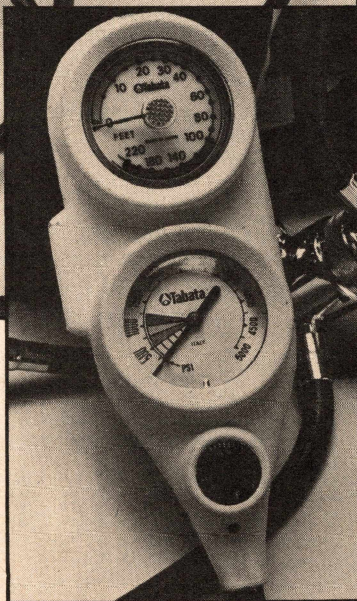
TOTAL DIVING SYSTEM

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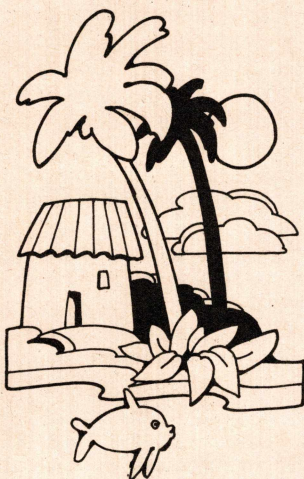
TEXT AND PHOTOGRAPHY BY ERIC HANAUER



The Tabata Total Diving System (TDS) includes the Series 800 buoyancy compensating jacket; TR-30 regulator with octopus second stage; a console fitted with a 220 foot maximum depth gauge, a 5,000 psi submersible pressure gauge, small thermometer, compass and small underwater slate.



DIVER'S DIRECTORY



Advertising rates: \$129.00 for three consecutive ads, \$222.00 for six consecutive ads, \$336.00 for a full year. DEADLINE: 28th of 3rd month prior to publication. PAYMENT MUST ACCOMPANY COPY. Send all material to: Diver's Directory, c/o Direct Response Advertising, P.O. Box 69910, Los Angeles, CA 90069.

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